

Herb ③ Cam ③

16	526
1	19
3	339
8	1
1	
2	885
53	131
43	1016
1	
131	

8690

Ratio
carnivores/herbivores
total

Herb ⑥ Cam ⑥

11	266
13	9
105	
1	
8	
1	381
3	85
1	456
22	
24	8090
1	
1	
85	

Herb ④ Cam ④

14	1
8	266
1	9
5	105
28	381
15	72
1	453
72	
8490	

Herb ⑦ Cam ⑦

8	1
1	187
2	5
4	170
1	
7	363
17	54
16	417
1	
54	8790

Herb ⑬ Cam ⑬

5	1
2	177
1	5
18	61
3	
32	244
	32
	276

8990

Herb ⑥ Cam ⑥

7	1
1	39
1	3
2	24
6	67
8	25
25	92
	7290

Herb ⑬ Cam ⑬

1	1
1	27
4	1
1	9
1	38
7	20
4	58
1	
20	6590

526	131	885	65
361	85	381	2
266	72	381	20
187	54	363	30
177	32	244	2
39	25	67	3
27	20	38	18
	419	2359	1
		419	151
		2778	113
			5
			1
			411

2359
419
2778

2359.0
22224
13660
13890

herb	can.	✓
55	10	5
5	5✓	1.9
12	19✓	32
31	32✓	6
2	6✓	13
4	13✓	15
20	15✓	20
2	200✓	3
150	20✓	9
75✓	2000	122
1✓	3✓	200
5	9✓	322
12	50	
374	1500	
	3882	
	322	
	3560	

$$\begin{array}{r} 3882 \\ 374 \\ \hline 4256 \end{array}$$

$$\begin{array}{r} .91 \\ 4256 \overline{) 3882.0} \\ \underline{3830} \\ 5160 \end{array}$$

$$\begin{array}{r} 3560 \\ 373 \\ \hline 3939 \end{array}$$

$$\begin{array}{r} 3933 \overline{) 3560} \\ \underline{3560} \\ 0 \end{array}$$

$$\begin{array}{r} .90 \\ 3933 \overline{) 3560.0} \\ \underline{3539} \\ 2030 \end{array}$$

$$\begin{array}{r} .85 \\ 3250 \overline{) 2764.0} \\ \underline{2600} \\ 16400 \end{array}$$

* Pit 3 - "Remarkable for big proportion of tiger, among carnivores, and that of bison among ungulates, found in one deposit."

Skulls 496 — Sloth 12
Bison 15
Camel 1 occas. bones
Horse 7

T many bones
exposed
viewed

M Mastodon 1 (occasional bones as well)
Tiger 268 } 453
Wolf 185 }
lion 5
Bear 1 in bad state
Tern 1

* Pit 4 Total of 286 fairly perfect skulls + 75 unskulled.

"Bison as scarce here as they are plentiful in Pit 3" (Oct. 20, 1913)
later, more bison.

Tiger 90 } 264
Wolf 174 }
Sloth 7 T many bones
Bison 5
lion 7
horse 14
Camel 8
Tern 1

M Baby Mastodon bones also adult?
Note anterior

noted

Pit 9 - Not much saved, but the following noted during excavation:
E Elephant 7 skulls, 14 pairs mandibles bones
M Mastodon 4 " 10 " " bones
Bison 1 " T bones
Large Bear several
quantities of bones. lion, tiger, wolf, camel, horse, bison, sloth

* Pit 13 - Notable features. Bone deposit had been at one time almost entirely covered by domed roof of clay; excessive wear or abraded condition of bones & high to ground sloth
99 skulls; Tiger 39 sloth 5
Wolf 53 lion 1
not lion 1
one horse, bison, camel bones but no skulls.

* Pit 16 - M mastodon - bones (2 ^{individuals} ^{speaks of} yg as two separate)
camel - bones (4 or 5) + 1 skull
bear - skull ①

Urocyon - 3 skulls

Cat, n.s.p. - 1 "

Several crania - Tarry

Bison - 4 skulls

Coyote - 5 "

Horse - 2 "

Tiger - 2 "

Wolf - 12 "

sloth - scutes only

much bird

27 skulls

also some frags of skulls
" bison
several sign
6 + wolf

noted Pit 17 - Poorly preserved bones
E eleph frags several over (better than 9.)
tiger

2 big bear jaws

sloth femur (2)

M mastodon jaws & teeth

Pit 25 - Tiger, wolf, coyote, sloth, bird, small mammals, ^{have}
in very small area mostly to 6 ft. have throat at 12',
clay bottom at 12'.

Pit 35 - Few bones, Tiger, bird horse to 2'-3'.

Pit 36 - Tiger, horse at 3'
horse, bison, at 4'
M tooth baby mastodon at 4' (size of dollar)
Capromeryx jaw
ungulates & birds at 7'; some wolf,

X Pit 37 - Bird, coyote, badger, deer - surface - 3'
little deeper - more bird & small mammals to 5'
NO LARGE MAMMALS

noted Pit 43 - Very little except frags & small bones,
saber of tiger
bones of wolf
frags of eleph.
"some of 'all common sorts'"

2 Pit 44 - Bones few & soft, bird, steer (meat?), sloth vertebrae. "Nothing of value"

noted Pit 49 - "a large sloth at $6\frac{1}{2}$ ' & below." POORLY PRESERVED

Pit 50 - ^E Teeth of elephant ^{+ sloth} 1-2' below bottom of lake
Some other bones (notes don't say of what) at 2' below lake bottom
Elephant - "almost perfect tooth" at 3' below bottom.
also piece of tree trunk 3'.

noted Pit 57 - small bones; sloth radius 1-2' depth
wolf skull & bones (poor preservation, fell apart)
wolf + sloth skulls 7'
tiger + wolf bones in "tunnel", sloth, ^E elephant, ^(horse?) ^(impaled?)
Secured very poorly, but preservation very bad.

* Pit 60 - Only 40 complete skulls, frags, rep. 20 more
80 boxes of skeletal material.
Tiger 13 skulls
Wolf 24 "
Sloth 1 " + raccoon + other bones "much sloth"
Horse 1 (2?)
Bear 1
Bison bones, camel bones
Bridge small mammals few one area rich in birds
but all broken

* Pit 41 Catalogued skulls
M mastodon bones
49 camel jaws
deer cranium without tines
Bones
"Grant sloth, tiger
wolf, coyote, bison (+ little sloth?)"
used in same pocket as small bones smoothed by human hands
@ 9, 10-12 ft

99 wolf	176 total
7 coyote	
64 tiger	
2 sloth	
1 horse	
1 deer	
1 lion	
1 Notostictus ("little sloth")	

noted Pit 65 - Bones all rotted Tho dense. Kinds not mentioned, but
definite is likened to outcrop at East end so must be plenty.

with Pit 67 - 6 little sloth skulls, Tiger more than wolf
61
Tiger 120 skulls
Wolf 118
Coyote 13
Sloth 6
Little sloth 6
Horse 3
Bison 3
Lion 2
Badgers numerous
271

* Pit 77 - Considerable Bear (2 indivs.) seemed to thru ^{due to} wall ^{caving}
 was part of same skeleton found in Pit 60 4 ft to west
camel skull + most of skeleton
 "little sloth" + some bones

Only one for RLB
 M Pecary + few bones
Mastodon femur + $\frac{1}{2}$ tibia

Tiger 32 skulls
 wolf 24 "
 sloth 6 "
 horse 5 "
 bison 3 "
 camel 1 "
 little sloth 1 "
 pecary 1 "
 73

25 % of total
 "catch" of pit

total
 skulls

* Pit 81 - Bones visible in mass
 sloth, bison, horse, camel, tiger, wolf, coyote
 M mastodon (very good skull frag)

* ¹⁰ unit packed Pit 90 "Bones of the usual sorts" are overlaid & further
 in large unit pit, 2 boxes bone in 2 x 4' x 2' space

* Pit 91 Left for display [Bones taken]
 tiger, horse, bison shown

✓
 Photos of 9, 4, 3, 10, 13, 16, 17, 60, 61, 67, 77, 81, 91

Mastodon in Pits 3, ⁴9, 16, 17, ³⁶61-67, 77, 81 (9 Pits)
 Elephant in Pits 9, 17, 50, 57 (4 Pits)

Separate pits

✓✓✓ 3 — 5 paces so. J-10 + 00 (NE corner pond)

✓✓✓ 4 — NW of pond

✓✓✓ 61-62 — south of 4 — bet 3 & 4 — in pond

✓✓✓ 9 — well north, at west end park (92)

✓✓✓ 13 — " " still further west than 9

✓✓✓ 60 — Bet 2 Univ pits at west end (80 might tie in)
✓✓✓ 80 — NW. 60 normal marker but 2 or 3 bones (bet 60 & west Univ pit)
✓✓✓ 77 — 4 ft so. of 60 but separate

✓✓✓ 81 — beside west Univ pit but a bit west & separate

✓✓✓ 44 — west of 81 — south west only

Univ ✓✓✓ 90 — pocket in large Univ pit (also 54?)

✓✓✓ 91 — 10 ft S.W. of " " " (separate)

✓✓✓ 16 — east end of park north of house & barn

✓✓✓ 25 — " " " " " (sep. from 16)

✓✓✓ 35 — Near corner — near oil lake

✓✓✓ 36 — separated by 40'

✓✓✓ 17 — North edge of lake (across)

✓✓✓ 43, 49, 57, 63, 72 — by outer edge of lake (all on?)

✓✓✓ 65 — ditch SW of lake

✓✓✓ 50 — center of lake

Recent

✓ 28

✓ 10 — west of large Univ pit (considered)

✓ 37 — NW of 10

✓ 83 — NW house (almost due west of Pit 16)

✓ 51 — North oil lake

✓ 59 — SE tip of lake

Refuit areas

- R ✓ East end of lake (43, 49, 57, 58, 62, 63, 66, 72, ~~67~~)
 R ✓ Middle of lake 50
 R ✓ No. bank of lake 17 (Acad) + 64 (uninhabited) 19 (already worked)
 R X S.E. tip of lake 59 (no good - recent?)
 R ✓ Ditch draining lake 65 (old Acad)
 50 west of lake

east of barn 32 (nothing)

Mus N west of barn 16 (31 + 25 off to ^N east)
 See below

Mus West of oil lake { 35 (north east end of park)
 See below { 36 near 35

✓ Bay Univ. Pt - 1, 2, 90, (91 not in but near)
 54

West Univ. pit area 81, 82, 24,

see below

60 is near but sep.

AND Museum separate Pits

Pit 3 ✓

Pit 4 ✓

R Pit 9 (with 92) nothing

X Pit 10 (recent)

Pit 13 ✓

Pit 16 ✓

Pit 36 ✓ (with 35)

X Pit 37 (recent)

R Pit 57 (nothing)

Pit 60 ✓

Pit 61-67 ✓

~~Pit 68~~
 Pit 77 ✓

Pit 81

Total 19 areas
 of which

3 Recent

7 Rotted Plants

July 1913
Cruz
Left

1912	1913
July	111
Aug	11
Sept	1
Oct	111
Nov	
Dec	

[illegible]

average 160 boxes per unit.

$$\begin{array}{r} 161 \\ 18 \overline{) 2902} \\ \underline{18} \\ 110 \\ \underline{108} \\ 22 \end{array}$$

69
185
271
399
201
128
182
97
137
263
258
198
135
134
44
46
84
73

290.2⁹

$$\begin{array}{r} 14 \\ 27 \\ 24 \\ 29 \\ 9 \\ 16 \\ 21 \\ \hline 135 \end{array}$$
$$\begin{array}{r} 214 \\ 25 \\ 24 \\ \hline 263 \end{array}$$
$$\begin{array}{r} 24 \\ 17 \\ 18 \\ 18 \\ \hline 77 \end{array}$$
$$\begin{array}{r} 21 \\ 23 \\ 17 \\ \hline 55 \end{array}$$
$$\begin{array}{r} 37 \\ 31 \\ 10 \\ \hline 78 \end{array}$$
$$\begin{array}{r} 168 \\ 17 \\ 28 \\ 45 \\ \hline 258 \end{array}$$
$$\begin{array}{r} 57 \\ 17 \\ 18 \\ 58 \\ 30 \\ 16 \\ \hline 196 \end{array}$$
$$\begin{array}{r} 13 \\ 32 \\ 20 \\ 43 \\ 26 \\ \hline 134 \end{array}$$

Bliss '29

= PAB?

Bird bones (chimeri & Yami) sorted by Joan Malloy 1948

Tarsi	Dist	<u>Left</u>		Dist	<u>Right</u>		total		Dist	<u>Left</u>		Dist	<u>Right</u>		Total	
		prox.	whole		Prox.	whole				prox.	whole		Prox.	whole		
Aquila ✓	3	1	8	2	1	6	11		Accipiter ✓	2	0	1	0	0	1	3
Turkey (4 spots) ✓	4	6	4	8	9	1	10		Otus ✓	2	1	0	1	1	1	3
Urbitinga ✓	2	0	1	0	0	2	3		Tyto ✓	6	1	2	3	3	4	8
Speotyto ✓	7	6	3	5	6	9	15		Falcons ✓	0	0	1	1	0	3	4
Buteo borealis ✓	0	2	2	0	0	4	4		Caracara	0	0	0	1	1	1	
Circus ✓	1	1	0	2	0	2	4		teratornis	1	0	0	1	0	2	3
Buteo regalis ✓	1	0	0	0	2	2	4		<u>Humeri</u>							
crane ✓	1	0	1	0	1	1	2		<u>Right</u>							
Buteo swainsoni ✓	0	0	3	0	2	5	7		boose	1	0	0	0	0	0	See Tarsus
Species buteo ✓	0	0	0	0	0	1	1		Spizaetus	1	0	0	0	0	0	" "
Goose ✓	0	0	1	0	0	2	2		Neophrontops	0	0	0	2	1	0	" "
Spizaetus ✓	1	0	0	0	0	1	1		Cathartes	0	0	0	0	1	0	" "
Stork ✓	0	2	0	0	0	0	2		Falcons	0	1	0	1	2	0	" "
Condor	0	0	0	0	0	1	1	see humerus	Tyto	0	0	0	2	1	0	" "
Asio ✓	3	1	5	0	3	5	8		Coragyps ✓	0	1	1	0	0	0	2
Wetmoregyps ✓	0	0	0	0	1	0	1		Condor ✓	1	4	0	0	1	1	5
Bubo ✓	2	1	0	0	0	0	2		Aquila	3	1	0	1	1	2	see tarsus
Neophrontops ✓	0	0	0	3	0	0	3		Hawk	0	3	0	0	1	1	" "
Egret ✓	1	0	0	0	0	0	1		Caracara ✓	2	1	1	0	0	1	3
Cathartes ✓	1	0	0	0	0	0	1		Turkey	1	0	0	2	2	0	see tarsus
									Accipiter	0	0	1	0	0	0	" "
									Haliaeetus ✓	1	0	0	0	0	0	1

? = record for species here according to Wymale notebooks.

Mammals

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	61	67	77	81	91	S. Calif Acad of 17	Total
Arctotherium													1							
Bear, "			1	?	5		1						?	?	1	1			1	
Bear, Unseen						1		1												
Mustela			2	4		5		4		2	1			1			2			
Spilogale			2	2				5						1						
Mephitis			2	(5) 11			1	12		1										
Taxidea			4					1			1			6	1					
Urocyon			2	4				8						1		1				
Canis lupus	2	2	8	29	1		5	5	?		3		5	9	16				1	
C.																				
Cervyon davis	?	6	92	87			5	5					5	53	74	3	1			
" " medium		9	86	65			43	7		?			14	40	39	22	1	1		
" milleri														2	1					
Felis atrox			5	3	1		1	1					1	2	4	1				
" dayzetti															1					
" oregonensis				1			2													
Simulodon		9	103	54	?		3	2					4	51	87	4		1		
" medium			114	30			23						8	14	35	34				
Lynx calif.								2												

large 434
small 20

large 271
small 50

large 2
small 374

large 210
small 57

large 177
small 14

L. 277
S. 17

S. Calif
Acad
of
17

Total

Species	Los Angeles museum Pits																		Acad of	T. Rep
	1	2	3	4	9	10	13	16	28	36	37	51	60	61	67	77	81	91	17	
Citellus						3		1?									2		1	
Thomomys						15		9	8	3	1						15			
Perognathus						2			8		1									
Dipodomys						1			2	1										
Reithrodontomys									1											
Onychomys						1			1											
Peromyscus						5		1	7						1					
Neotoma								1												
Microtus									2	2										
Lepus						2		1			1						1			
Sylvilagus auduboni						2		7	1	1					1		1			
" baccharis					3	1			1											
Platygaster																1				
Odocoileus			2	1										3	2	1				
Antilocapra															1					
Capromeryx			1	5	2		1	1		2			1			1			1	
Camelops		2	2	6			1	2					1	3	5	1				
Bison			10	3	?		?	3	?				?	?	1	?		1	1	
Equus	1	5	15			1	1	3	?	?			1	1	3	5				

← Los Angeles Museum Pit →

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	61	67	77	81	91	Accord 212	Total
Elephas columbi					1															
Elephas in pectus					16							1 (Pit 50)								
Mastodon			1	1	1			1		1	1	1 (Pit 50)		1	1	1	1		1	
Megalonyx			1													1				
Myiodes		?	9	9	?			5					2	3	4	3				
Notiotherium			2										1	2	14	1			1	

	1	2	3	4	5	6	7	8	9	10R	13	16	28R	36	38R	51	60	61	67	80D	77	81R	83R	84	80	91	97
<i>Canis</i> <i>dimus</i>	x	x 15	x 76	x 150							x 48	x 12					x 19	x 92	x 14	x	x 23	x 2				x 1	
Coyote	1	2	x 8	28					x 1		x 5	x 5					5	x 9	x 16								
<i>Antilocapra</i>									5 x	1 x		x					1 x	x		1		2 x					1
Unus												1															
Fox			1	4								8 3							1								
Badger			4	1								1						7	1								
Small mammal										x	x	x					x	x	+								
Skunk			2	16							1	10 5						1									
<i>Felis concolor</i>				1					1		3	2 wildcat															
<i>Felis atrox</i>			x 5	x 5					1		x 1	x 1					x 1	x 2	x 3		x 1						
<i>Smilodon</i>		x 9	x 198	x 83					x		x 26	x 2					x 12	x 64	x 120		x 38						
<i>Mastodon</i>			1	1					x			1							1	1	x 1						
Elephas									x 16											1							
Egagrus		x 1	x 5	x 13							1	x 3						x 1	x 1	x 3	x 5	x					
Camelops			2	9							1	3						3	4		x 2						
Bison			11x	3x					x		x	3x					x	x	1x		x					1	
<i>Capromeryx</i>			1	5					2		1	1									1						
<i>Megalonyx</i>			1																		1						
<i>Neotomus</i>		1x	2x	x					x		x						1x	2x	9x		1x						1
<i>Myiadora</i>	1	3	16	12					1		x	1					9	4	5		5						

and bird - just below surface.

Horse, bison, mastodon, antelope, wolf, bird

coyote, badger, deer, birds (no large mammals)

small mammals + birds (with ligaments), deer

at 5 ft

at 8 ft

at 11 ft

at 15 ft

at 20 ft

at 25 ft

at 30 ft

at 35 ft

at 40 ft

at 45 ft

at 50 ft

at 55 ft

23-11 wags, sloth, small bones, tiger - bones noted with these
displaced, horse, many bones but all noted.

below transverse
at 2-3 ft
small bones of mammals
below which is all from horse, bison, tiger, wolf at 5 ft

below leather shoe, coyote, deer - very recent
(P. 17 a red digging in road. locality)

mammal occurrence by pits

✓ Tiger 4/3/2/9/77/61/14/13/60/67/91
 ✓ Lion 3/13/14/61/60/67/4/77/

✓ Elephant 9/17

✓ Mastodon 9/14/17/3

✓ Deer 3/9/13/4/2/77/67/61/60/
 67/61/77

✓ Bear 10/3/4/60/77/9/14/61

✓ Small mamm 67/61/60/13/14/4/3/10

Camel 77/67/61/60/13/3/4/14

✓ Wolf 4/3/13/1/2/77/67/81/91/P.D./61/60
 16/

✓ Lion 3/4/13/9/14/67/61/77/60

✓ Coyote 61/67/9/13/3/16

✓ Beaver 77

✓ Deer 61

✓ Horse 77/67/2/61/60/16/3/4

Pit 1 + 2 just pockets
 in U.C. excav.

Pit 28
 surface floor present
 (bird bones, coyote, yg horse,
 etc.)
 no bone beyond 8 ft.

body of good matrix containing
 just under surface.

Pit 36
 4 ft - horse + Bison - mastodon, antelope
 5 ft all ungulates
 7 ft ungulates + birds - occas. wolf.
 11 ft end.

Pit 37
 birds near surface also coyote, badger, deer etc.
 birds cont. to 8 ft - grad
 no large mammals.

Pit 38 rooted tree (12 ft.)
 6" to 1 1/2 ft. bird + small mammal
 recent?
 below 1 ft. begin getting wolf, tiger, etc.

$$\begin{array}{r}
 155' \\
 95' \\
 \hline
 775' \\
 1395' \\
 \hline
 14723 \\
 930 \\
 \hline
 4.42
 \end{array}$$

$$\begin{array}{r}
 155.00 \\
 14.72 \\
 \hline
 140.28
 \end{array}$$

$$\begin{array}{r}
 125' \\
 3 \\
 \hline
 465' \\
 775' \\
 \hline
 842.8
 \end{array}$$

$$\begin{array}{r}
 155' \\
 4 \\
 \hline
 9.30
 \end{array}$$

$$\begin{array}{r}
 155 \\
 3.2 \\
 \hline
 775 \\
 465 \\
 \hline
 4.425
 \end{array}$$

$$\begin{array}{r}
 14132 \\
 24 \\
 \hline
 117
 \end{array}$$

$$\begin{array}{r}
 140.90 \\
 442 \\
 \hline
 30) 145.32 \quad (4.84 \\
 \underline{120} \quad \quad \underline{1.20} \\
 253 \quad \quad 600.4 \\
 \underline{240} \\
 132
 \end{array}$$

Elephant columba

Eggs

Felis atrox

9 1 ✓
17 1

E. imperator
9 IIII IIII ap.

67 1 ✓
50 1

Felis (oregonensis)
4 1
13 III ✓
9 1

Muscle ✓
16 1

Martodon

4 1
3 1
Acad III
67 1
6 1 ✓
77 1
36 1
9 1
17 1
8 1

Deer

4 1
6 1 ✓
8 1
3 1

Beaver

77 1 ✓
Vigoyon
fox ✓
16 III

meplatonyx

P 3 1 ✓
77 1

Badger

67 1 ✓
6 1 IIII

Turtle

3 & 4

Ursus

16 1 ✓

37 III

4 IIII IIII

16 1/1

77 IIII

2 1

6 1

67 III

60 1

13 1

wild cat

16 11 ✓

artifacts?

6 1 IIII +

16 feathers

67 IIII +

3 1777

4 IIII

6 1 11

9 1 ✓

16 1

67 IIII (Tuesday)

13 1

60 1

77 1

shell in 61 & 67

Archelionus?
Bear

Birds

9 IIII

3 I

60 I

10 I ✓

67 I

77 II

17 II

3 IIII IIII I

14 III

4 III

91 I ✓

67 I

Camelops

16 II

4 IIII III

14 I

67 IIII ✓

61 III

13 I

3 II

77 II

60 I

Corpus

13 IIII ✓

67 IIII IIII I

4 IIII IIII IIII IIII IIII

14 IIII

2 II

61 IIII

3 IIII II

60 IIII

91

37 IIII

1 I

Capromeryx meracanthus

4 IIII

13 I

3 ✓

9 II (above elph.)

16 I

77 I

Acad. I

Nothiostema

Skull

67 IIII

Acad 1

3 1
6 1 1

77 1

scapula 9 1

l. tibia

l. tibia

61 1 1

verte 60 1

rib 3 11

" 2 1

F

3-F 3519-21

3525-26

3532-38

3545

4-4238

4252

5-5582-83

5595

OK 5601-39

5655

OK 5885-5914

6-6117

8-8160-8170

8313-8333

OK 8335-8345

OK 8344-48

8429

8441-42

8444

8445

8451

8455

8465

8477

8488

8516-22

8548-51

8553-54

8907

8942

8984

9002-21

9100-9105

9128-9129

9180

9809-9909

2-F 2286

2442-49

2518

2525

2693

170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210

6

G 174-210

215-216

2 2278-82

4 4988-5639

5 5698-5115

5155-5187

5395-5410

5488-5490

5508-5548

5628

5680

5686-87

8 8957-9019

9 9057-9100

9063-69

9100-9166

9258-80

9317

9317 (three)

H

H 3232-74

3311-14

3356-61

3366-71

3604

5058

5148-72

5182-84

5206-60

5465-66

6770-98

6835-48

6857

8284

8288-98

8309-835

8366

8433

8514

55780

5782-83

5785-88

5788

3532-33

K 3535-3547

3614-24

3628-3638

3792-98

3797

3799

3813

3815-3820-21

3825-26

3835-36

3836-3851

3860-3868

3873-3880

3885-87

3905

3972-94

4113

4142-4149-60

4298

4302

not filled

10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Acad

K3170

1

2

P 5582-83
F 555-95

F5601-5639

F5655

F5885-5914

F6117⁽⁹⁾

(P210)

femur

F8160-70

tibia

F8313-28

F8330-33

F8335-8341

F8344-48

F8396

tibia

279

F8416

F8429⁽³⁾

F8441⁽¹⁹⁾-42⁽²⁰⁾

F8444⁽³⁾

F8448⁽²⁾

F8451-58

15
11
15
13
20
9
22
33

138

F8465⁽¹⁵⁾

F8477⁽²²⁾

F8516-22

F8548-51

F8553-54

F8947 humerus

F8984-99 "

F9003 -21 "

F9100-9105 "

F9128-29

humerus

✓

F9180

"

F9809-9909

"

G174-210

"

G213-216

"

G2278-82

"

G4988-5039

tarsus

G5098-5112

"

G5114-15

"

G5155-73

"

G5175-87

"

G5401-08

"

G5400

"

G5488²-89

"

G5508-5598

"

G5678

"

G5680

"

G5686-87

"

~~15280~~

~~5782-83~~

~~5785-88~~

~~2/3~~

|||||

||||| 4
102
26

|||||

|||||

|||||

Pt 10

(2) L

G 8957-9029⁽²⁾ } ulna

G 9057 ✓ 163

G 9063-69

G 9100-66

G 9258-80

G 9317⁽³⁾ (capitulum)

H 3232-74 } carpus

H 3311-14

H 3356-61

H 3386-71

H 3504

H 5058

H 5148-72

H 5182-84

H 5206-46

H 5248

H 5250-60

H 5465-66

Cora.

H 6770-72

H 6774-84

H 6784-98

H 6835-48

H 6857

Scapula

H 8284-85

H 8288

H 8290-98 (99?) = 89

H 8309-15

radius

H 8366

H 8433 } radi.

H 8514

||||
J 5780

J 5782-83

J 5785-88

||||

} femur

|||||

|||||

~~J5780~~ 10 }
~~J5782~~ " } furcula
~~J5783~~ " }
~~J5785-8~~ " }

K3102 77 ulna
 K3103 61 humerus
 K3104 4 furcula

1

J8811 36 }
 J8818 " }
 J8825 " } carpus
 J8834-6 " }

J8883 13 humerus
 J8890 77 tibia

K966 36 }
 K967 " }
 K969-983 " }
 K986-995 36 }
 (2K9925) " }
 K997-999 " }

K1007-1016 36 tibia ✓

K1025 36 tarsus ✓

K1085 36 tarsus ✓

K1088-1100 36 tarsus ✓

K1117-19 36 tarsus ✓

K1121-25 36 " ✓

K1141-42 36 " ✓

K1149-50 36 " ✓

K1151-1167 36 " ✓

K1181 " " ✓

K2774 " radius ✓

K2786 60 humerus

K2799-2800 36 radius ✓

K2890-2907 36 femur ✓

K3001-04 36 tibia ✓

K3090 3 tarsus

E3160 3 femur

E7605 4 radius

E8695 3 + tibia

E8797 3 tibia

E8901 3 tibia

E8957 3 femur

E9139 3 "

E9231-2 3 tarsi

E9316-17 3 femur

E9365 16 "

E9710 61 "

E9836 4 "

E9839 4 tibia

E9857 4 "

E9897 4 "

E9899 4 femur

E9939 4 "

E9998 13 humerus

f

1
2

④ ✓

174 175

R 5689-5694	81	June 6
R 5695-5699	16	" 5
R 5700	25	" — 1
		" — 6
R 5764-69	37	" — 2
R 5770-71	36	" — 2

F5817-20	37	4	4
F5821-34	16	11	16
F6114	?	11	1
F6118 ⁽²⁾	37	11	2

F6119	14	"		
F6121⑨	14	"	9	69

6122⁽¹⁴⁾ -23⁽²⁾ 28 " ~~16~~
R8056-58 16 Tibia 3

F8132	16	"	1
F8134-36	16	"	2

F 8157-59 28 11 3
R 171 36 ✓ 11 1

F8172 37 "

F8307 36 ✓
=8308-09 28 "

$= 8310 - 12$ 37 1

F8342 28 "

F8343 3 1
F8349-52 37 4

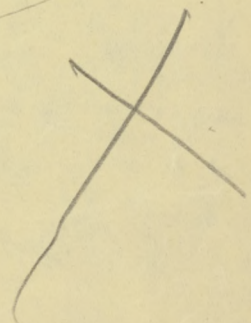
F8353	36	11	1
F8355	16	11	3

F8358-60 37 11 3

111 111 111 111

F8416 ⁽⁴⁰⁾	14	fibra	7	F9156-62	16	humero	5	✓
F8418 ⁽¹⁶⁾	14	"	86	F9614-9699	16	"	G2132,77	humero
F8425 ⁽²⁾	?	"	104	F9705-9808	16	"	G2124 (28 or 9)	
F8426 ⁽²⁾	37	"	147	F9953-F9999	16	"	2	
F8427	?	"	17	G1-17	16	"	"	
F8428	81	"	1	G50	16	"	356	
F8439 ⁽³⁾	X	fibra	6	G53-58	37	"		
F8474 ⁽⁹⁾	81	"	112	G61-772	16	"		
F8482 ⁽²⁾	16	"	14	G217-230	28	"		
F8485 ⁽³⁾	37	"	2	G231-233	?	"		
F8493 ⁽⁹⁾	28	"	6	G235-240	?	"		
F8494	?	"	2	G242-43	?	"		
F8497 ⁽³⁾	37	"	6	G245-250	37	"		
F8499	28	"	2	G252-53	13	"		
F8575-79	16	"	1	G254	3	"		
F8903-04	16	humero	11	G255-265	37	"		
F8908	28	"	4	G266-269	4	"		
F8909-13	37	"	5	G271-272	51	"		
F8948	16	"	2	G273-74	36	✓		
F8949	36	✓	24	G275-293 ⁽²⁾	81	"		
F8970-74	28	"	3	G294 ⁽²⁾ -295	9	"		
F8975-78	37	"	10	G491-499	28	"		
F9001-62	16	"	2	G501	36	✓		
F9092	37	"	18	G534-551	28	"		
F9093-94	16	"	2	G2020-23	36	✓		
F9106	4	"	3	G2033-35	36	✓		
F9115-25	16	"	11	G2057-96 ⁽²⁰¹³⁾	36	✓		
F9130-31	37	"	1	G2101	36	✓		
F9132	81	"	7	G2107-13	36	✓		
			1	G2116	36	✓		
			39	G2119-24	36	✓		

679
2
39
690



310
349

G 5040-61, 16 22 *tarvus*

~~G 5065-87~~

G 5063-78 ⁵⁰⁶⁷⁰ 16 19

G 5079 90 1

G 5080 28 1

G 5081-2 51 2

G 5083-87 81 5

G 5089-5092 81 4

G 5093 37 1

G 5094 2 1

G 5095-6 36 2

G 5097 4 1

G 5116-23 16 8

G 5125-41 ⁵¹³⁶⁰ 16 18

G 5143 16 1

G 5144-49 28 6

G 5150-52 81 3

G 5153-54 2 2

G 5188 16 1

G 5190-91 16 2

G 5193-5201 16 11

2 on 2

G 5203-08 16 6

G 5210-46 16 42

(2 on 5)

G 5248-54 16 7

G 5256-86 16 33

(2 on 2)

G 5288-94 16 8

(2 on 1)

G 5296-99 16 4

G 5301 1

G 5305-27 16 233

232

G 5329-46 ^{2 on 1} 16 79

G 5348-67 16 20

G 5369-74 16 6

G 5376-82 16 7

G 5383-5400 28 18

G 5411-12 36 2

G 5413-31 ? 19

G 5432 81 1

G 5433-54 16 22

G 5455-56 4 2 *tarvus*

G 5457-84 16 30

G 5491-96 37 6

G 5497-5507 81 11

G 5599-5616 28 17

G 5616-22 16 7

G 5623 36 1

G 5624 36 1

G 5624-36 37 11

G 5637-41 81 5

G 5667 ? 1

G 5668-75 ^{3 on 1} 16 9

G 5676-77 16 4

G 5679 16 1

G 5681 37 1

G 5682-85 16 4

G 5688-94 28 7

G 5695 37 1

193

~~G 5698-94 36~~

232

425

✓ (6)

231

9

G7644-48	36	ulua	4	G9177-9200	81	2
G8793	14	"	1	G9201-04	37	4
G8797-98			2	G9205-11	28	7
G8800			*	G9212-51	16	40
G8802				G9252-55	?	+
G8804	16	"	5	G9256	28	1
G8811				G9257	60	+
G8813				G9281-90	36	10
G8815-17	3			G9291-93	16	3
G8835-42	8			G9294-96	2	3 ulua
G8844-8937	94			G9298-99	?	2:
G8939-41	3			G9300	16	1
G8943-50	8			G9301-03	?	3
				G9304-13	16	21
G8951-52	36	2		G9314	81	1
G8953	?	1		G9315	16	1
G8954	16	1		G9318-22	36	5
G8955-56	36	2		G9324	36	1
G9020	81	1		G9328	16	1
G9022-41	16	20		G9337	36	1
G9042-47	37	6		G9344	28	1
G9048-52	36	5		G9345	16	1
G9053	51	1				114
G9054	?	1		H3275-3300	16	26
G9055-56	28	2		A3301	34	1
G9058-62	36	5		A3302-05	28	4
G9070-95	16	16		A3306-08	37	3
G9096-97	37	2		A3309-10	81	2
G9098	4	1		A3315	37	1
G9099	9	1		A3316-55	16	39
G9167-77	28	11		A3362	28	1
G9178	13	1		A3363-65	16	3
G9179	81	1		A3372-78	16	2
G9180-82	37	3				87
G9183-98	16	16				

H 3379 : 37
 H 3380 - 82 28
 H 3383 16
 H 3384 ?
 H 3385 } 16
 H 3387 }
 H 3394 81
 H 3395 - 97 16
 H 3398 28
 H 3399 37
 H 3400 ?
 H 3401 16
 H 3402 - 4 28

Carpus

19

H 3542 81
 H 3543 - 44 ?
 H 3547 - 59 16
 H 3560 28
 H 3561 - 70 } 16
 H 3578 - 80 }
 H 3583 - 93
 H 3595 - 3603
 H 3605 - 06

Carpus

59

H 4930 - 58 } 16
 H 4960 - 5017 }
 H 5018 - 26 ?
 H 5027 - 47 36
 H 5048 - 57 14
 H 5059 - 69 16
 H 5070 ?
 H 5071 - 5142 16

Coracoid

201

201
 60
 14
 280

H 5143 - 44 28
 H 5145 37
 H 5146 - 47 4
 H 5173 - 74 36
 H 5175 28
 H 5176 16
 H 5177 - 81 36
 H 5187 - 88 81
 H 5189 - 94 37
 H 5197 - 5201 ?
 H 5202 17
 H 5203 - 05 21
 H 5261 - 69 36
 H 5296
 H 5317 16
 H 5338
 H 5357 - 71 28
 H 5372 - 80 } 16
 H 5382 - 5400 }
 H 5405 ?
 H 5409 }
 H 5418 } 36
 H 5424 - 25 }
 H 5459 - 60 }
 H 5461 - 63 16
 H 5464 } 28
 H 5467 - 74 }
 H 5626 36

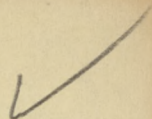
encond

20
 108

✓ 8

Pelvis

~~Pelvis~~



✓ F 3527-29, } 28 3
 ✓ F 3531 }
 ✓ F 3530 51 1

✓ F 3538 } 10 1
 ✓ F 3525-26 } 2
 ✓ F 3519-21 } 3
 ✓ F 3535-37 } 3

✓ F 4243 37 1
 ✓ F 4253 51 1
 ✓ F 3573 37 1
 ✓ F 3577 81 1
 ✓ F 3577 10 1

✓ F 4235(4) 10 4

✓ F 3532-34 10 3

✓ F 3539 28 1

✓ F 4237 (2) 28 2

✓ F 4239 (2) 28 2

✓ F 4254 81 1

✓ F 3540 28 1

✓ F 3545 10 1

✓ F 3522-24 37 3

✓ F 3562-67 16 6

✓ F 4240 (37) 28 3

✓ F 4252 10 1

F 3519-40

F 3545 3

F 3551

F 3562-67

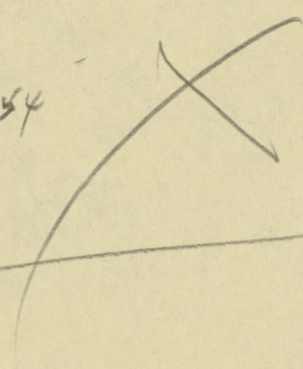
~~F 3573~~

F 3577

F 4237-40

F 4243

F 4252-54



5

17

57

7

1

1

47

Radii

H8300-08 9
H8450-59 10
H8448-49 2
H8316 1
H8280-83 4
H8286-87 2
H8434-37 4
H8299 1

8280-83 16
 8286 28
 8287 37
 8299-8303 37
 8304-05 28
 8306-08 16
 8316 ?
 8434-37 16
 8448 37
 8449 16
 8450-59 28

8402-04
 14-14

manuel ✓

4
 1
 5
 2
 3
 1
 4
 1
 10
 38

38

Copied
 1

Scapulae

A 6852 - 58

A 6762 - 69

A 6858 - 60

A 6862

A 6720 - 21, A 6724 - 26

A 6849 - 50

A 6773

A 6785

A 6813 - 17

A 6727 - 40

A 6799 - 6812

A 6818 - 34

A 6741 - 44

A 6746 - 61

6720-21 16 2

6724-26 36 3

6727-44 16 18

6746-61 16 15

6762 28 1

6763-65 37 3

6766-67 36 2

6768- 81 1

6769 36 1

6773 10 1

6785 1 1

6799-6812 16 13

6813 ? 1

6814 28 1

6815-16 36 2

6817 37 1

6818-34 28 17

6849 ? 1

6850 37 1

6852 16 1

6853 28 1

6854-56 16 3

6858-60 28 3

6862 36 1

6770-88 = 10 including other scaps

34
18
16

6857-10

94

Part 36

J 8811, 8818, 8825, 8834-36

K 966-67, 969-83, 986-95, 997-99

K 1007-6, 1025, 1085, 1088-1100, 1117-19, 1121-25, 1141-47, 1149-67, 1181

K 2776, 2799-2800, 2890-2907, 3001-04

F 4778, F 5770-71, F 8171, F 8307, 8334, 8353, 8949

Q 273-274, 501, 2020-23, 2033-35, 2051-96, 2101, 2107-13

G 2116, G 2119-24, 5095-96, 5411-12,

June. ~~XXXX~~ 11 ~~119~~ 41

Beaks F3126
28

36

Stem F2526¹⁰, F2442²⁵, F2605-06¹⁶, F2462¹⁶, F2448¹⁰, F2532³⁶, F2436²⁸,
F2461²⁸, F2440⁴¹, F2525¹⁰, F2446¹⁰, K2741³⁶, F2459-60¹⁶, F2449²⁸, K2740³⁶, F2445¹⁰,
F2443¹⁰, F2514¹⁰, F2519¹⁶, F2286¹⁰, F2520¹⁶, F2437²⁸, F2439²⁸, F2447¹⁰, K2745³⁶

Mandible F2724²⁸, F2948³⁷, F2693¹⁰, 1126

Quadrato F3398¹⁶, F3419¹⁶, F3399¹⁶

F2436-37, 39

F2440-43, F2447-49, F2448

F2459-62

F2532, F2525, F2514, F2519, F2286, F2520

F2605-06

K2740-41, 45

Pit 3 ^{questionable areas}
could be present

D9127-9130 - No data
D9131-9134 - Center, 1 foot
D9155-9157 - No data

E 584-585 - No data

E 2098-E2511, Center, 1 foot

E 2551-E2786 - Caved
E 2851-2878 - ETF, 3-4 feet
E 2976-2982 - Caved

E 3012-3042 - "

E 3175-3177 - No data

E 3178-3182 - Caved

E 3206-3215 - Caved

E 3246-3247 - No data

E 3261 - " "

E 3262-63 - Caved

E 3287-3296 - Caved

E 367 - No data

E 7942-7962 - Caved

E 8022-8036 - Caved

E 8062-64 - "

E 8069-8075 - Center, 1 foot

E 8086-88 - Caved

E 8107-8125 - "

E 8223 - No data

E 8678-8791 - Caved

E 8902-8946 - "

E 8948-8993 - "

E 8999-E9046 - Center, 1 foot

E 9096-9108 - Center, 1 foot

E 9167-9169 - Caved

E 9178-9183 - No data

E 9234-9237 - Caved

E 9297-9300 - No data

F147 - " "

F168 - "

F406-408 - Caved

F450-451 - Center, 1 foot

F493-495 - Center, 1 foot

F1034-1056 - No data

F1067-1077 - Caved

F1103-1105 - "

F1109-1114 - Center, 1 foot

F1601-1666 - Center, 1 foot

F1667-1672 - No data

F1698 - Caved

F1749

F1751-54

F1839-40

F1844-49

F1851-52

F1854

F1911-16

F1920

F1925

F1937-38

Caved

Above F2120 all
data has been
omitted in cats
except Pit no.

Pr-3 -
Questionable #'s (might be Recent)

B390-529 - No data	B4397-4398 - Center 1/foot
B530-550 - Caved	B5979 - 358 feet
B551-582 - No data	B5983 - No data
B591 - Caved	B5985 - "
B620-629 - "	B5990-5991 - No data
B644-653 - "	B8007 - Caved
B672-679 - "	B8009 - "
B694-697 - "	B8013 - "
B1374 - "	B8018 - "
B1400 - No data	B8068-69 - No data
B1517-1552 - Caved	B8184 - Caved
B1626-1632 - No data	B8185 - No data
B1633-1688 - Caved	D1668-1781 - Caved
B1711-1718 - "	D1939-1967 - Center 1/foot
B1818-B1850 - "	D1968-2068 - Caved
B2005-2027 - "	D2236-2253 - "
B2049-2072 - F384, 5 1/2 feet	D2315-2321 - No data
B2073-2089 - No data	D2401-2448 - Caved
B2090-2300 - Caved	D2471-2519 - Caved
B2312 - F384, 5 1/2 feet	D2624-2630 - No data
B2322-2331 - No data	D2701-2759 - Caved
B2350 - F384, 5 1/2'	D3168 - Caved
B2499-2523 - No data	D7001 - No data
B2541-2570 - "	D8429-8513 - Caved
B2689-2700 - "	D8514-8614 - No data
B3236-3559 - Caved	D8734-8752 - Caved
B4013-4014 - "	D8766-8777 - "
B4028-4037 - Center, 1 foot	D8832-8845 - Center, 1 foot
B4135-4138 - Caved	D8846-8854 - Caved
	D8893-8917 - "
	D8949 - "
	D9118-9119 - No data

Chart of this pit - see orig. notes in Ductus safe.

Pit 16 - "pocket" or chimney on SW side of main deposit
at 14-20' high, + few other large + quantities
bird bones, chimney 1-2' deep x 2' wide x 5-6 high.

Pit 61

27' ^{EW} (~~NE x SW~~) x 24' NS with extra pocket 6 x 6 + also.

Pit 67

18' (EW plus ~~two~~ pockets westward at S end about 12 x 9')

18' NS + 5' pocket + 3' pocket so.

67 is wedged pond 10' so + slightly east of P. 7 x

61 bank + bed of pond at NW extremity
initial cut 5' across width of runway of P. 7 x

map of 67 "includes all portion of old
pond bed east of ^{the} approx N-S line
separating 67 from 61."



27 + 18 + 12 x 24?

Pit 10 initial cut $3\frac{1}{2}$ ft wide NE x SW
6' square ^{cut} made SE side of initial cut to cone
~~down~~ remainder of deposit.
Chimney 12 inches wide Homo @ $6\frac{1}{2}$ '

Sank on old dirt in patch of hard asphalt.
Pt 37 Bird near surface, Coyote layout marked,
birds abundant to 8 ft.

Pt 36 Bed of hard asphalt beneath dump with ^(very Recent) egg holes
on bed of asphalt - here, sign at 3'

~~6' lateral extent~~ *

At 6', the lateral extent is well defined 2x4 ft
mostly irregular & birds, occasional wall, ~~to 6 ft~~
vein pushed out at 11 ft.

Peromyscus
Perognathus
Perodromys
Pertho?

tiny rodent
left lower
st lower

1 2 3 4 9 10 13 16 28 36 37 50 60 61 67 77 81 91 P.D Acad

Rodent teeth

upper jaw robust

" " gopher

lower jaw gopher

" " robust

" " ?

" " neotoma

fox left hand

st "

Muscle

Laurel

Microtus

Neplutid

Badger

left jaw

Scap

" left

st radius

left "

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		P	P	P	P		P						P	P	P	P					17 Agad
	1	2	3	4	9	10	13	16	28	36	37	50	60	61	67	77	81	91	P.D.		
Antilocapra															1						
Canis dirus		6	92	87			5	5					5	53	76	3	1				
Canis ³³ large																					
Canis ³² medium		9	86	65			43	7					14	40	39	22	1	1			
Canis ²⁴ miller														2	1				1		
Canis ¹⁰ theimer													1								
Bear																					
(Canis?)			1		5		1								1	1				1	
Bear																					
Ursus						1		1													
Bison			10	3				3							1			1		1	
Camelops		2	6				1	2					1	3	5	1					
Coyote	2	2	8	29	1		5	5			3		5	9	14					1	
Canis			1	5	2		1	1		2			1			1				1	
Elaphes																				1	
Columba																					
Empidonax					14							1									
Felis atrax			5	3	1		1	1					1	2	4	1					
Felis daggetti															1						
Felis				1			2														
lynx																					
calif.								2													
Mephitis			2	⑤ 11			1	12		1											
Mastomys			1	1	1			1		1				1	1	1	1				
Megalomys			1														1				

Mammals by pit occurrence
 P to 152 = fossils in O.C. excav.

from Wyman acc't of Boxes?

	1	2	3	4	9	10	13	16	17	60	P.O. 61 67		77	81	91	28	36	37
Smilodon		✓	ⓧ	ⓧ	✓		ⓧ	✓		ⓧ	✓	ⓧ	ⓧ		✓			
Lion			ⓧ	✓			ⓧ	✓		✓	ⓧ	ⓧ	✓					
Elephas					ⓧ				✓									
Mastodon			✓		ⓧ			✓	✓								✓	
large sloth		✓	ⓧ	ⓧ	ⓧ		ⓧ			ⓧ	✓	ⓧ	ⓧ					
small sloth											✓	✓	✓					
Bear			✓	✓	✓	✓		✓		✓	✓		✓					
small mam.			✓	✓		✓	✓	✓		✓	✓	✓				✓		✓
camel			ⓧ	ⓧ			ⓧ	ⓧ		✓	✓	✓	✓					
wolf	✓	ⓧ	ⓧ	ⓧ			ⓧ	✓		✓	ⓧ	ⓧ	ⓧ	✓	✓		✓	
Bison			ⓧ	ⓧ	✓		ⓧ	✓		ⓧ	ⓧ	ⓧ	ⓧ				✓	
Coyote			✓		✓		✓	✓			ⓧ	ⓧ				✓		✓
Beccary													✓					
Deer											✓							✓
Horse		✓	✓	✓				✓		✓	✓	ⓧ	ⓧ			✓	✓	

Total mus. 96

	B777	B780	B789	83	91	90
Depth	21'	12'	6'8"	5'	10'	
slab	6th	✓	✓			
Bison	3	✓	✓			
Camel	1	✓	✓			
Horse	5'	✓	✓			
Mastodon	✓	✓	✓			
Elephant		✓	✓			
Tiger	32	✓	✓			
Lion		✓	✓			
Wolf	24	✓	✓			
Bear	✓	✓	✓			
peccary	only one found at 20'	✓	✓			

Total
good skulls 73
broken skulls 100?

4x4' mass taken out

5' gap

Recent in clastic

Exhibit in pocket in

put

Exhibit in

put

Exhibit in

put

Exhibit in

put

Exhibit in

put

Exhibit in

put

Exhibit in

put

Exhibit in

put

Exhibit in

put

	skulls	skulls	longer jaws								Pit 49 similar to 48 resemble				abundant but noted		very large		noted none kept	
	Pit 3	Pit 4	Pit 9	Pit 13	Pit 16	Pit 17	Pit 21	Pit 28	Pit 36	Pit 37	Pit 43 outcrop barren below 16'	Pit 44 barren at 11'	Pit 50 q?	Pit 56 Recent	57	Pit 59	Pit 60	Pit 61	Pit 65	Pit 67
Depth	27'	25'	33½-34½'		27'	20'	12'	8½'	11'	8'	16'	11'	9'		18'	12'	15½'	18'	13½'	20'
Sloth	12	7		5			✓				✓	reab	✓		✓		1	3	✓	+ 6 small 6
Bison	15'	5'			4				✓											3
Camel	1	8			1													✓		
Horse	7	14			2			yr ✓	✓						✓		1	1		3
Mastodon	1		10			✓			yr ✓									✓		✓
Elephant	—		15			✓					✓		✓		✓					
Tiger	268			39	2	✓	✓		✓		✓				✓		13	64		120
Lion	5	7		1														1		2
Wolf	185			53	12		✓		✓						✓		24	99		118
Bear	1				1	✓											1			
Teratodon's	1	1																		✓
Puma				1																
Coyote					5		✓	✓		✓								7		13
bird							✓	✓	✓	✓		✓		✓		✓		✓		
small mamm							✓	✓						✓		✓		✓		
antelope deer								✓		✓										
Total Good skulls	496	286		99	27												40	176		271
Bad skulls	50 ap.	75		40	13 ap.												20?	75		

bones a few but
rather

unquale

17

91

? 16 April, dann?

[illegible]

	1	2	3	4	9	10	13	16	28	36	37	60	61	67	77	81	91	51	P.O	17
<i>Antilocapra</i>		II	II	II			II	II				II	II	II	II	I				
<i>Die wolf</i>		II	II	II			II	II				II	II	II	II					
<i>Die wolf</i> <i>medium</i>		II	II	II			II	II				II	II	II	II					
<i>A. milleri</i>																				
<i>Austrochima</i>																				
<i>austrochima</i>																				
<i>Ursus</i>																				
<i>Bischof</i> <i>(Acad. 1)</i>																				
<i>Canis lupus</i>																				
<i>C. o. arcticus</i>	II	II	II	II			II	II				II	II	II	II					
<i>Acad. 100</i>																				
<i>Capromeryx</i> <i>(Acad.)</i>																				
<i>Elephas</i> <i>Arcticus</i>																				
<i>E. nrip</i>																				
<i>Equus</i> ✓																				
<i>Felis</i> ✓																				
<i>atrox</i> ✓																				
<i>S. deserti</i> ✓																				
<i>Mt. lion</i> ✓																				
<i>Lynx</i> ✓																				
<i>calif.</i> ✓																				
<i>Megastictus</i>																				

P. 50 (1)

Birds and mammals of Pit 2 Rancho La Brea

KEEP

Goose, sp.	1	Canis ochropus	2
Anabernicula	1	Aenocyon large	6
Cathartes	1	" medium	9
Coragyps	5	Smilodon large	9
Gymnogyps	1	Equus	1
Breagyps	1	Myiodon	several
Teratornis	1		
Circus	1		
B. borealis	1		
B. swainsoni	1		
B. regalis	2		
U. fragilis	1		
Aquila	11		
Haliaeetus	2		
Neophrontops	6		
Polyborus	3		
Tyto alba	1		
Bubo	1		
Pica	1		
C. corax	1		
C. hesperis?	2		
or caurinus			

29 (22 ant)

40/1

Pit 3

Ardea herodias	3	Capella delicata	1	Bear	1
Botaurus	1	Phaeopus	2	Mustela	2
Ciconia	2	Limosa	1	Spilogale	2
Geese	7	Zenaidura	5	Mephitis	2
Mallard or Pintail	2	Geococcyx	1	Taxidea	4
Nettion	2	Tyto	32	Urocyon	2
Cathartes	3	Otus	1	C. ochropus	8
Coragyps	41	Bubo	6	Aenocyon large	92
Gymnogyps	89	Glaucidium	1?	" medium	86
Breagyps	7	Speotyto	14	F. atrox	5
Teratornis	22	Strix brea	2	Smilodon large	103
Ethanus	1	Asio	27	" medium	114
A. velox	1	Pica	12	Odocoileus	2
A. cooperi	3	C. corax	11	Capromeryx	1
Circus	31	C. hes. or caur	1	Camelops	2
B. borealis	7	Sturmella	3	Bison	10
B. swainsoni	19	Cyanocitta	1	Equus	5
B. regalis	10			Mastodon	1
U. fragilis	9			Megalonyx	1
Morphnus	7			Myiodon	9
Aquila	86			Nothrotherium	2
Spizaetus	8				
Haliaeetus	11				
Neogyps	4				
Neophrontops	18				
Polyborus	29				
F. mexicanus	2				
F. peregrinus	1				
F. columbarius	2				
F. sparverius	3				
Lophortyx	42				
Parapavo	2				
Grus canadensis	2				

50

603

7.191

121

603
26
57

56
27
83

426
422/47

Birds and Mammals from Pit 4, R. L.B.

✓ Ciconia	8	Lophortyx	7	Bear	?
Geese	22	✓ Parapavo	173	Mustela	4
✓ Anabernicula	1	G. canadensis	6	Spilogale	2
Mallard or P't	1	Fulica	1	Mephitis	11
Nettion	3	Squatarola	1	Urocyon	4
Cathartes	4	Phaeopus	1?	C. ochropus	29
Coragyps	61	Columba	1	Aenocyon large	87
Gymnogyps	33	Geococcyx	4	" medium	65
Breagyps	33	Tyto	3	Felis atrox	3
Terry	20	Bubo	21	F. oregonensis	1
A. velox	1	Speotyto	3	Smilodon large	54
A. cooperi	16	✓ Strix	2	" medium	30
Circus	8	Asio	5	Odocoileus	1
B. borealis	8	Pica	11	Capromeryx	5
B. swainsoni	1	C. corax	5	Camelops	6
B. regalis	4	C. caurinus	2	Bison	3
B. sp.	2	Sturnella	4	Equus	15
✓ Wetmoregyps	4	Agelaius	1?	Mastodon	1
✓ Urubitinga	17			Myiodon	9
✓ Morphnus	5				
Aquila	238				

✓ Spizaetus	30	Ursus	1	Smilodon large	2	Equus	3
Haliaeetus	28	Mustela	4	" med	0	Mastodon	1
✓ Neogyps	20	Spilogale	5	Lynx calif.	2		
Neophrontops	40	Mephitis	12	Citellus	1?		
Polyborus	40	Taxidea	1	Thomomys	9		
F. mexicanus	2	Urocyon	8	Peromyscus	1		
F. columbarius	1	C. ochro.	5	Neotoma	1		
F. sparverius	8	Aen. large	5	Sylvilagus a.	7		
		" med.	7	Capromeryx	1		
		F. atrox	1	Camelops	2		
				Bison	3		

Podilymbus	1	✓ Urubitingas	27	Columba	1
Ardea	1	✓ Morphnus	3	Ectopistes	1
Egretta?	1	Aquila	382	Zenaidura	17
✓ Ciconia	10	✓ Spizaetus	35	Geococcyx	9
Geese	22	Haliaeetus	66	Tyto	2
✓ Anabernicula	3	✓ Neogyps	32	Otus	5
Gadwall	3	Neophrontops	36	Bubo	59
Baldpate?	1?	✓ Polyborus	144	Glaucidium	1?
Mallard or P.	14	F. mexicanus	3	Speotyto	15
Nettion	12	F. peregrinus	3	✓ Strix brea	5
Querquedula	2	F. columbarius	3	Asio	18
Cathartes	2	F. sparverius	24	Tyrannus	1
✓ Coragyps	25	Lophortyx	84	Aphelocoma	3
Gymnogyps	4	Parapavo	238	Pica	91
Breagyps	1	Grus can.	6	C. corax	15
Terry	13	G. amer.	1	C. caurinus	6
Astur	2	Oxyechus	14	Toxostoma	2
A. velox	2	Capella	6	Oreoscoptes	1
A. cooperi	17	Numenius	1	Turdus	14
Circus	4	Totanus	12	Lanius	1
B. borealis	17	Limnodromus	3	Sturnella	12
B. swainsoni	1	Sandpiper	1	Agelaius	9
Bl regalis	2	Limosa	1	Molothrus	1
B. sp.	4	Sanderling?	16	Cyanocephalus	1
		Shorebird, Sp?	1		
		Lar. brachy.	1		

Use in part
for March 11, 1960
Significance of Carbon-14
dates -----

Science 131 (3402)
pp 712-714

(Also data on
mammals per Pitt
and Wyman's old
notes

Pit 3 tree 8' tall
at edge of pit
First exposed at $4\frac{1}{2}$ ft
in D-2,

Rooted at 12 feet
in sloping bank
in "stiff clay"

Bone

Report continued to
271

grew at edge of pit,
on sloping bank of
what may once
have been a gully.

Pt 16 - has ^{let} 12 } very yg blackbird "
N 14 }

Pt 36 ~~Cornus~~ cryptoleucus?
caupus 58818

Pt 16 ~~Colophloeus~~ pileatus
H 3605 caupus

119
14

Pt 77

T. bin 58890

blue K302

Coraco F1792

hunny G2132

yes
pasenne
~~and~~ !
just in a
~~big list~~
~~if #1's~~

61-67

E 9710

F 1813-17 (5)

F 1819-23 (5)

F 1825-27 (3)

F 1828-34 (7)

P 2043

K 3103

23

Pt 60

P 853

F 1785-89 (4)

G 9257

K 2786

7

$$\begin{array}{r} 5779 \overline{) 3189.0} \\ \underline{28895} \\ 29950 \\ \underline{28895} \\ 10550 \\ \underline{13} \end{array}$$

$$\begin{array}{r} 5779 \overline{) 757.0} \\ \underline{5779} \\ 17910 \\ \underline{17337} \\ 5798 \end{array}$$

P 716 cont'd

left side chimney T.
went down in main deposit
to 14' much bed in sft
tan with lumps of hard
horse skulls

16' - still many small bones
14' in chimney to SW
apparently about exhausted

18 1/2' to 19' many small bones
many peacock bones
& spined shells
but 14 & 15'

Picked & new crack at 27'
But only below 22'

An almost circular hole
with practically vertical wall
down to 20' where they encroach
slightly. Contacts more at 24' T.
joints out at 27'
Chimney to see was a "clut"
1-2' deep, 2' wide, 5-6' ht.

message

for

to see you

from

telephoned

$$\begin{array}{r} 12.4 \\ 56 \overline{) 695} \\ \underline{56} \\ 135 \\ \underline{112} \\ 230 \\ \underline{224} \\ 6 \end{array}$$

$$\begin{array}{r} 85 \\ 21 \overline{) 178} \\ \underline{105} \\ 73 \\ \underline{70} \\ 3 \end{array}$$

$$46 \overline{) 337}$$

$$\begin{array}{r} 23 \overline{) 167} \\ \underline{161} \\ 6 \end{array}$$

$$\begin{array}{r} 165 \\ 97 \overline{) 933} \\ \underline{825} \\ 108 \end{array}$$

$$\begin{array}{r} 165 \overline{) 1098} \\ \underline{990} \\ 108 \\ \underline{108} \\ 0 \end{array}$$

$$\begin{array}{r} 12 \overline{) 117} \\ \underline{108} \\ 90 \end{array}$$

$$\begin{array}{r} 4.42 \\ 90 \overline{) 840} \\ \underline{76} \\ 80 \end{array}$$

$$\begin{array}{r} 2.7 \\ 41 \overline{) 110} \\ \underline{30} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

$$\begin{array}{r} 23 \overline{) 71} \\ \underline{69} \\ 20 \end{array}$$

telephone number

appointment made

time . . . day . . . date . . .

taken by

time

date

Pit 16 June 19

at $6\frac{1}{2}$ to 8' " Bone dep. not enlarged

On the contrary it is contrary - - - -

That part of diggings from which practically
every bone has been taken is now

hardly more than 4' across & looks

as tho it may be the bottom of a large

dep. the upper portion of which had

been eroded & carried away, " over

taken by

time

date

time day

appointment made

telephone number

To this point 8'
at below, 1'
1'-4'  animals, canal

sloth

bison

horse

lion

tiger

wolf

bears 5-6

Mantodon

8-10' layer and roadcut
4' diameter

below ~~11'~~ extends in
narrow chimney to SW

tiger skull, much
bird & small mammals

for

message

to see you

telephoned

16
9
21
16
13

PA 10 skulls + jaws

F2663-2670

F2683-2693

F2739-41, 44-45

F2701-03

F2809-2829

F2855-2868

F2942

F2951-52

F2956

F2972-75, 77-80

F3001-02

F3022-34, 36-49

F3058-60, 36-49

F3100

F3128-31

F3144-45

F3173-76, 79-96

F3234-36, 43

F3250-53, 55-57, 97

F3327-29

F3504 to option

PA 28

F2724-26

F2729-30

F2953-55

F2967

F2981

F3124

PA 37-2830-54

F2943-44

F2961-64

F2968-71

F2982-84

F3013-15

F3050-53

F3062, 64

F3102-03

Pt. 1
B1401-1422, B8247

Pt. 2
B760-786, B1381, B1423-1516, B5997

Pt. 3
B390-715, B1360, 1362, 1367, 1372
1374, 1383, 1396, 1397, 1460
B1577-134395, B5765-5773, 5474-5992
B7999-8002, 8004-8011, 8013, 8018, 8021-8029
8065-8072, 8181, 8184-8188
8244, 8305-8315, 8321-8322, 8325, 8366-67
8373-8380

Pt. 4
B1-389, 716-759, 1368, 1377-1378
1382, 1385-1388, 1391-1395, 1398
4399-5764, 5773-5810, 5993-5996
8003, 8012, 8066-67, 8177, 8189, 8326-8332
8345-62, 8368

message

for

to see you

telephoned

from

Pills sent to

Hubbards for

dating

Q. J. [initials]

Pill 16
(12 pills)

Pill 4

G-3
(5 pills)

Pill 9
(6 pills)

Schedule some
C 14 dates

telephone number

appointment made

time . . . day . . . date . . .

taken by

time

date

Estimated weights of La Brea animals

Short-faced bear 2500 lbs.

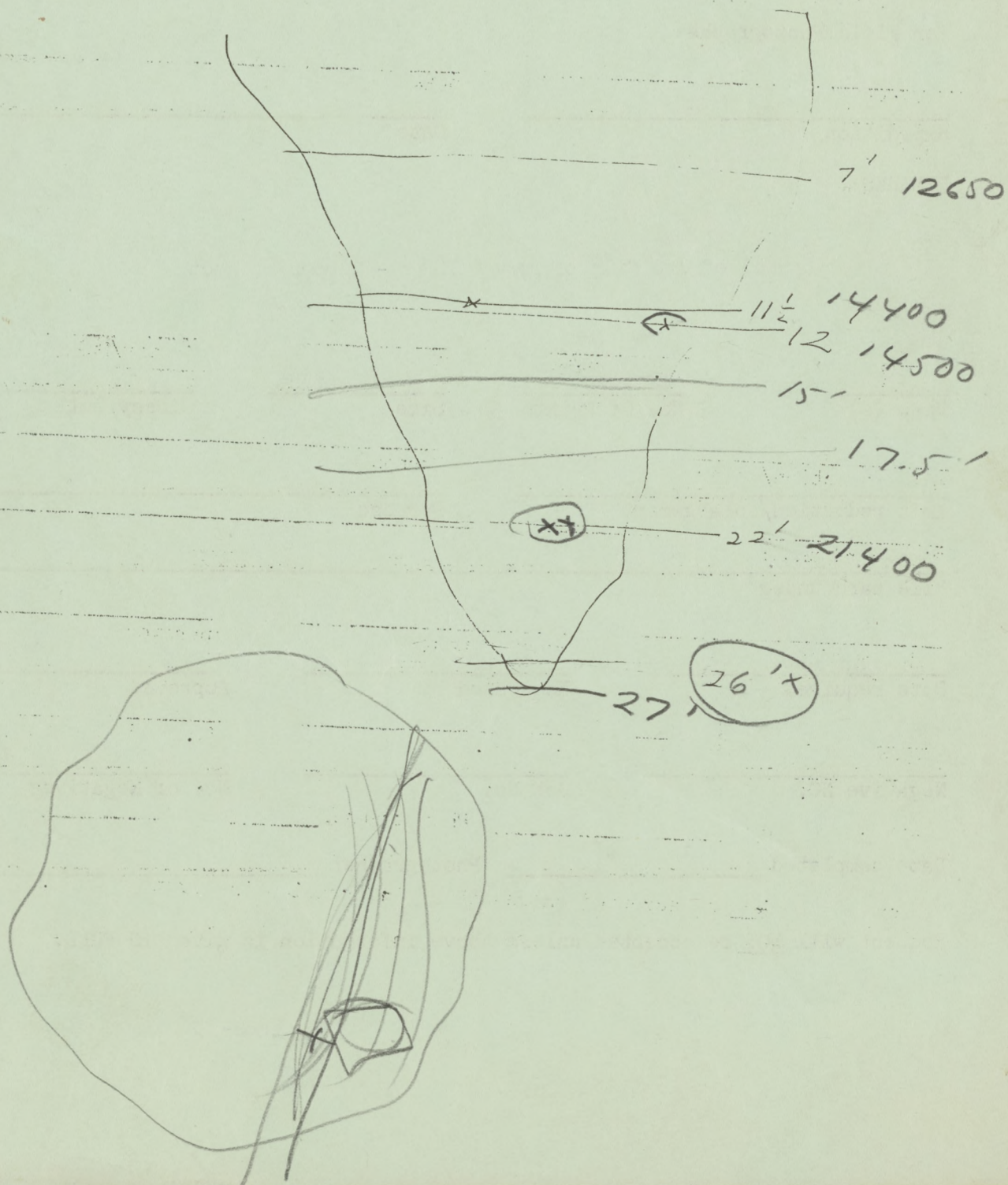
Mylodon 2 tons

Taxidermis 40-50 lbs

from an old letter 1945' H

Cir Daring

Pt 3 PLB



Aug. 14, 1967
Date

REQUEST FOR PHOTOGRAPHS

Graphs
Object Scientific Name

Locality/Source

Sex, Age, etc.

Accession/Loan No.

For Field Photographs:

Expedition

Date

REMARKS:

Roll of 120 film of Wade Miller - Marcus project

View (s) 1 each No. Of Prints Contact Size Glossy Glossy/Dull

Am't reduction/enlargement Research Purpose

Vert. Paleo.
File card under

As soon as possible
Date required Requested by Leslie F. Marcus Approved J. Dour

Negative NO. Job No. No. of Negatives

Date completed Photographer

Request will NOT be accepted unless above information is given IN FULL.

Pit 61-67

Few bones in G8, plentiful in F8
leaves out in G8 - good F-D

G10 sloth pelvis $15\frac{1}{2}$ feet

Hard asphaltum covers G9 and part of G8; below 12' barren

F-G9 + most of F10 barren below $15\frac{1}{2}$ '

After came in - solid ground in H, I 8-9 at 10'

G10, $19\frac{1}{2}$ ' - sloth femur

G, H, 6-7, 8 bones coming in freely at 13'

H-8 - little sloth pelvis $18\frac{1}{2}$ '

I-10 large skull 14'

G6 large sloth skull 18'

G7 rich in skulls, wolf, tiger, coyote, sloth 14-18'

H & I 10-11 @ 18' bones (was a packet?)

H-11 - sloth skull + claws 18'

102 boxes of bones daily under 6'

H12 - wolf pelvis 18' (beside artifact)

H12 $17\frac{1}{2}$ ' little sloth skull

H, I, J 10-11 hard asphalt to 20'; few bones

G13 bones at $17\frac{1}{2}$ '

H10, 15' bone artifact in bed of grave

H7, 13' bone artifact

H7, 17' bone artifact in very hard matrix

H12, 18' wood artifact

I8, 17' bone artifact encased in
hard asphalt

B - F ? 16-17 of Pit 61
adjoins Pit 67

A 10, $13\frac{1}{2}'$ Pit 61 - mastodon pelvis (little more than $\frac{1}{2}$
" humerus

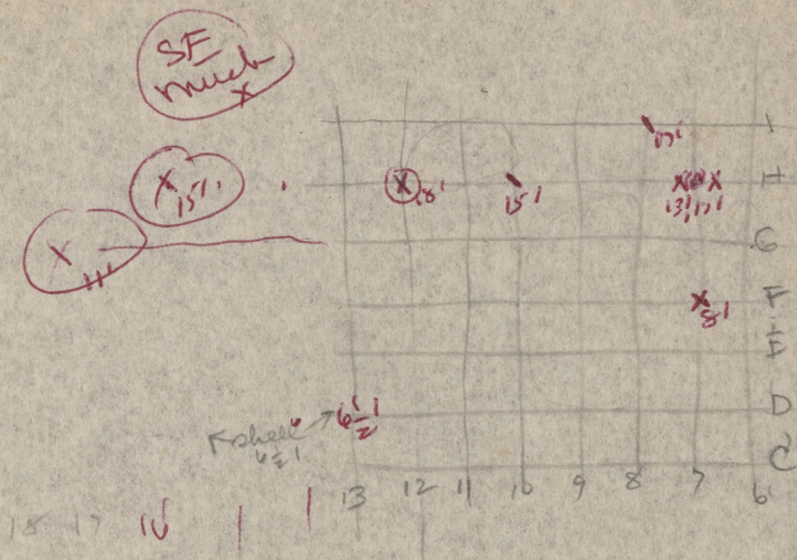
A 7, $17\frac{1}{2}'$ " "

A ? 17-20' " " $\frac{1}{2}$ pelvis of mastodon

G 15' 13' " " humerus under wall of head
asphalt (mate to one in
A 7?)

At start of Pit 67 - mastodon tusks (quite not given)

⊗ = taken after removal about all artifacts
from G₁H, 1, Pat 67 r 15' into 61



South (H) wall solid asphalt 9 - 12 1/2 ft
bones below

References to artifacts or other items associated with Homo sapiens from 61-67

Pit 67 -- October, 1914-June, 1915. Location north edge of "Pond", 10 ft. south and slightly east of SE corner of Pit 4.
(NOTE: This is to the east of Pit 61)

Oct. 28 - Sinkings parallel to and just inside asphaltic rim, on theory that another deposit of the nature of Pit 61 may exist here. Original surface was long ago removed to a depth of nearly 8 ft. below Pit 4 datum, in mining asphaltum, and this depression filled for some distance from the bank with muck from Pit 4.

Nov. 3 Through muck to old pond-bed at 8 ft below pit 4 datum... Struck some bones, mostly rotted, less than 6 inches below pond bottom, and a foot lower mastodon scap and pair of jaw (very soft)

Nov. 12 Spth sacrum at $11\frac{1}{2}$ ft. Looks as if main deposit lies south, toward center of pond.
Bones at 13 ft in fair state of preservation
Extending cutwell south to further locate direction of bone deposit. Matrix resembles that in Pit 61 -- mostly hard stuff, but with soft streaks and pockets.

Nov. 19. getting sound bones in east part of extension (F12) at 1 ft under pond bottom. Also ~~xx~~ a little deeper and fewer (in E and F 10 and 11), and so far, softer. Indications are that deposit extends further south and east.

Nov. 20-23 Skull of little sloth from 11 ft (D11) - soft nose.
Sloth pelvis partly exposed D11-12, $11\frac{1}{2}$ ft.. Bones being taken at 12 ft are sound, even though they have for many years been under water [$4\frac{1}{2}$ ft below bottom of pond]

Nov. 24 Nest of skulls around 12 ft.

Nov. 30 Matrix good and free from large lumps of asphaltum in part of pit farthest from pond center, while going toward center character of matrix changes rapidly.

Dec. 4 Bones in D15 and 16, 8-10 ft. Looks like "pocket" only

Dec. 7 Down to 15 ft in small area in original cut (E11) Horse skull exposed a few inches above this in F10
Bones persist in D15 and 16* Just getting to them in D13, 9 ft.
Earth overlying deposit just being uncovered in D13 and D15 and 16 is very tough and hard, with occasional big lumps of hard asphaltum and more or less fine gravel. Took SCALLOPED SHELL FROM THIS EARTH AT $6\frac{1}{2}$ ft.

*On Dec. 14 says "D15-16 yielded about two bones only. This pocket cannot be traced to connect with any larger deposit."

Dec. 14 Original cut is holding out well. Wall apparently reached on north (nearest Pit 4). Indications are that pits Nos. 61 and 67 will be found to connect and to be one and the same deposit.
(NOTE: North wall appears to be between C and D on chart)

Dec. 28 Took sloth skull in F on 10, $9\frac{1}{2}$ ft. Bad condition. Getting into bones, mostly rotted at 9 ft on west side. On south cutting thru a body of very hard asphaltum. Bones under this hard crust below 12

- Dec. 31 Finding good bones and lots of them in F and G 8-9, 10-12 ft. and D and E 8-9, 12 to 13 ft. South wall showed bones 11 to 13 ft through H 10-11, but not plentiful This wall was almost solid asphaltum from about 9 ft down to 12-ft, where it is becoming softer and bones appearing in sufficient quantity to indicate that deposit may extend under the water.
- Jan. 4 Took radius and femur of little sloth from Ell, 15 ft. Bones coming fast now. Sloth pelvis in E9, lying partly over section line 10. A lot of sloth coming from Ell-12, 15ft.
- Jan. 9 Wall hardly more than 6ft. thick separate this pit from Pit 4, whence were taken skulls and most of skeletal material of camels; while in 67 camel bones are very few.
- Jan 11. Many wash boulders up to 5 lbs. weight, appear in wall between 12 and 13 ft. mostly were hard asphaltum gives way to softer material. Practically none below 13 ft.
- Jan 13. Working in almost solid mass of bones excavating pelvis from E9
- Jan.15 Extreme dept of pit, 17 ft in Ell
- Jan 20 D-E 10-11 getting lean at 17-18 ft. Matrix persists but almost boneless. Considerable oxidized asphaltum
- Jan. 21 Mass of hard asphaltum, very brittle and more or less oxidized covers G9 and part of G8, below 12 ft. Nearly barren, but prospects good that bones will be found below it.
- Jan 26. Splendid matrix, fairly well boned, along west wall best in D and E South wall growing richer with depth, as shown in working sloth pelvis from G10
- Feb. 6 In cutting down wall between 67 and 61, found in 67, E7, 8 ft., PIECE OF WOOD SHAPE RESEMBLING SOCKET CHISEL HANDLE, almost as perfect as though turned by lathe.
- Feb. 11 Line 6 fixed as boundary between 67 and 61
- Feb. 13 What appears to be stratum about 6 inches ~~thick~~ deep of small wash boulders was struck between 19 and 20 ft. in Ell. Bones beneath.
- Feb. 15 South wall below 12ft crowding in considerably. What was level floor yesterday between this pit and 61 at 8 ft has risen 6 inches or more at south end in ~~H*G*H~~ H and I, 6 and 7 where great body of plastic muck filling large portion of old pond bed is working forward and squeezing everything before it.
- Mar. 9 Finding solid ground in H and I 8 and 9 around 10 feet. Saving all bones found in muck May have come from 3, 4, 61 or 67; all bones found in this are therefore said to come from "Pond Muck."
- Mar. 25 Floor of pit now cleaned. Cut down to 22 ft in Ell, last 2 ft. barren matrix. Ready to begin systematic digging again as soon as wall tags replaced and section lines relocated.. In meantime picking off loosening wall in 6 and 7 C, D and E, above 10 ft.
- March 29. Bone digging under way at last. Cutting down 6 and 7 to 12 ft level (6 is dividing line between the pit and no. 61). Good bones below 11½ft.

- March 30 3 tiger skulls from C9, 17-19 ft.
- March 31 Section 8, bone deposit terminates at 19 ft. Good matrix below but as far as explored is barren.
- April 1 Femur of sloth G10, 19½ ft. sloth jaws E8, Tiger skulls numerous in 8 near north wall. STONE ARTIFACT RESEMBLING HALF-HUB OF ...???? in solid bed of small wash-boulders and gravel in H10, 15 ft. ~~DEER ANTLER ARTIFACT in H7, 13 ft.~~
- April 2 DEER ANTLER ARTIFACT in H7, 13 ft. in original ground. Bones coming in freely at this level in G and H6,7,8.
- April 7 Matrix throughout 7 and 8 from C to H ideal for highest sort of preservation. Close to wall, C and D almost entirely oil-soaked sand.
- April 9 Mass across south wall covering 9 and part of 8 and 10, slid forward. Bones will be recorded as "caved." Bones in F 6-7 but not many above 15 ft.
- April 22 Bones in good state of preservation D, E, F, 6 and 7 and adjacent sections of 61.
- April 26 ARTIFACT OF DEER METAPODIAL AND SMALL SHELL OF SCOLLOP(?) TYPE from H7, 17 ft where matrix is very hard. Material encasing artifact was fairly pure asphaltum so hard that a quick blow would chip it.
It is notable that with one exception all artifacts recovered have come from area embracing G, H, I in 67 and continuing 15 ft into 61. This same area has yielded a greater variety of shells many of them larger than any taken heretofore, and a quantity larger than from all other excavations. There is in this a suggestion that an Indian camp was once located very close to this spot.
- May 1 Section 6 barren next to wall in G and H. Suspect bones will appear again below 18 ft.
- May 17 ARTIFACT OF WOOD, 10 inches long, with paddle at one end 1-in wide, 2-inches long and 1/8 inches thick, balance of stick round 3/8 "diameter, tapering to point from H12, 18 ft in solid earth lying beside wolf pelvis.
- May 21 A TOUT PIECE OF ANTLER THAT APPEARS TO HAVE BEEN USED AS FLESHER in H8, 17 ft in pocket of matrix almost entirely encased in hard asphaltum.
- May 26 FRAGMENT OF BONE ARTIFACT PERFORATED AT ONE END, in muck. Two similar found in 61. *From "Sweet wall" in 61, caved in earth, section in 61, 8/16, 4 ft.*
- May 28 "Southeast corner" covers G and H, 13-14 and half of 15 and cuts about 6 inches into F. Floor at present 16½ ft.. No real matrix or body of bone about 15 ft.
- June 16 SMALL STICK TAPERED AT ONE END about ½" diameter H16, 15 ft. also DEER ANTLER FLESHER in G18, 11 ft.

Total of 15 artifacts for 67
C, D, E, F, 6, 7, 8, 9, 10, 11 fairly continuous deposit from 12 to 20 ft. Adjacent sections boneiferous but continuous broken by irregular blocks of asphaltum or clay possibly produced by caving in of solid bank on top of mass of bones embedded in soft matrix. This condition existed from 6-16 above F and even inside limits of general deposit (C-F, 6-11)

Re: Pth 67

Original surface [in pond area?] was long ago removed
to a depth of 8 ft below Pth 4 datum, in min. asphaltum.
Depression filled with muck from Pth 4.

Location of L.A. County Museum Rancho La Brea pits, as per field notes

see 90-91

Pits 1 and 2 -- "mere pockets in the wall of the large University excavation"
Several boxes bones (no notes kept)

✓ Pit 3 -- 5 paces south of survey stake J-10+00, (at N.E. corner of pond)
first trench was cut from bank of pond "across a considerable seepage of fresh tar with some of the hardened material."
July 1913 Bird and small mammal bones ("probably those of existing species")
Aug 1914 at depth of 6 - 18 inches in center of area covered by outcrop and seepage. Around 2 ft. almost solid mass of bones -- but decayed. "Nothing of value was exposed above 4 ft."

✓ Pit 4 -- Northwest bank of artificial pond, west of house.
Began by "driving trench northeast into bank of pond, which bank at this point consists almost entirely of rock-like asphaltum."
Aug. 1913
June 1914 "Presence of bones indicated by fragments in surface of this rocky formations."
Quantities of bones just under surface -- so soft, couldn't be saved. Quantities of bones at and below 4 ft -- preservation poor until 8 ft. *Rich -- & well preserved*
Completed excavation showed deposit to have three "roots" beyond 16 ft. These went to depths of 19, 24 and 25 ft. respect.

✓ Pit 5, 6, 7, 8, nothing
Pit 9 -- Began by cutting 24 ft. long and 3 ft wide across outcrop of
Nov. 1913 hardened asphaltum, beside which was an active "vent."
Sept 1914 First fossil at 4 ft. Greatest depth $34\frac{1}{2}$ ft in fissure (narrow)
Rich, but POOR PRESERVATION - very little saved.

✗ Pit No. 10 -- Began work with dynamite to remove heavy deposit of hardened
Jan 1914 asphaltum about 3 ft above land surface adjoining on SW.
Mar 1914 Soft material 1 ft under crest of outcrop. Established datum at 1" under crest. Deposit exhausted at $13\frac{1}{2}$ ft. *HOMO, small mammals*

✓ Pit 11 and 12 nothing except beehives, wood & shell in 12, $4\frac{1}{2}$ - $5\frac{1}{2}$ ft
Pit 13 Near west fence on untouched part of a considerable area of
hardened asphaltum, through which a small vent was active.
Apr. 1914 Remainder of this surface deposit had been broken up, apparently
Sept 1914 by the use of powder, into large blocks probably in the search for commercial asphaltum 30 to 50 years ago. About two-thirds of the area had been so torn up, many blocks thus exposed showing bones embedded therein. Outcrop approx. circular, 30-35 ft diam.
Greatest depth 21 ft.
NOTE "Contrary to the usual order of things, the vent which supplied the tar content of this pit is most decidedly active, being located beside above-mentioned pelvis."
"Notable features about Pit No. 13 were evidence that the bone deposit had been at some time almost, if not entirely, covered by a domed roof of clay; the worn or abraded condition of the bones, and the high % of *large sloth*."

✓ Pit 14, 15 nothing
Pit 16 On big outcrop of hardened asphaltum at NW corner of stable.
Teratornis at 6 inches, camel at 18 inches to 2 ft.
May 1914 An almost circular hole with nearly vertical walls to 20 ft.
Aug. 1914 Contracts at 24 ft - a mere crack at 27 ft. Pocket on one side of main deposit at 14 to 20 ft. tiger and bird. *Rich & good.*

2. Pit 17 North bank of "lake", 12 ft. NW of surveyor's stake D100, Acad
July-Aug 1914 dug here years ago. *Poor preservation, typical Pleistocene includes mastodon, elephant*

✓ Pit 18, 19, 20, 21, 22, 23, 24, nothing
Pit 36 10 ft west and 5 ft south survey stake P-4+50 (40 ft. NW no. 35)
Artificial sump to depth of 12-15 inches. Hard asphaltum below with bones. Greatest depth 11 ft.
Aug. Sept 1914 *vein only 2' wide x 4' long.*

OVER

Pit 25 - 50' north of Barn. Cutting NTS across small area of asphaltum covered surface. Matrix just under surface with bones of tiger, wolf, very few birds coyote, small mammals. 12' max. depth.

Aug-Sept 1914

26, 27 - nothing

Pit 28 - SE of 26 (26 was 15' SE of survey stake S-12+50)

Aug 1914

X

"Near NW corner of concession". Cut thru surface identical to that in 26. Matrix just below surface bones, coyote, yg hare, small mammals, chiefly confined to vents. Depth $4\frac{1}{2}$ '. RECENT diam 4' x 5'.

29, 30, 31, 32, 33, 34, nothing

Pit 35 - 9 ft west & 6' north of stake O-5+00 (40' west of bank of "oil lake") Small outcrop, little far, body of matrix just below surface. Tiger, bird, hare 2-5' very few, Matrix ends 8'.

near 36

Pit 37 - 10' 00, 25' east of stake N-13+00. Bank on all vent where was small patch hard asphaltum. Depth 8' RECENT

38, 39, 40 nothing; 41, small stuff just under surface vent
42, nothing

Pit 43 - Beside survey stake C-4+00 (N end big outcrop east of "lake")
Spt 1914 stopped at 16'. good matrix still, but barren. Few bone pieces

with 49, 57, 58, 62, 63, 66

Pit 44 - 50 ft SW survey stake M-13+00 (Ret. Univ. pit & west fence) Cut 3 x 5 $\frac{1}{2}$ '

45, 46, 47, 48

Pit 49 - In big outcrop at east end of "lake", 30' No. 3 & 10' east of stake B-4+00. Dept 11'. Bones frags, common but very poorly preserved "like so much mush."

see 43

47 1/2
95.0
47 1/2
95.0
38.0

Pits in "outcrop to east of lake" 43, 49, 57, 62, 63, 66, 72
No mining near No.

Location of L.A. Museum R.L.B. pits -- continued page 2

- 40-feet south of stake D-6+00 in "Lake" (center of lake)
- Pit 50 Starting work by driving lagging into "island" (material dumped here from Pit 17), where shaft is to be sunk
Fossils found only immediately below crust of asphaltum that formed the bottom of the lake. ^{see 90-91}
- ✓ 51 Recent birds & mammals 55 ft; 52, 53, Nothing; 54 WOLF, TIGER bones on SW bank Univ. pit 5 paces east of No. K-12-00
- 55, 56 see 55
Nothing
see 43 58, nothing; 59 birds, rodents only 11 ft end
- Pit 57 25 feet west and 10 ft. south of stake C-3+50 (in swampy hole at east end of big outcrop east of "lake").
Greatest depth 23 ft. Lots of bone -- all rotted
- Pit 60 Midway between survey stakes L-12+00 and M-12+00 (between old Univ. pits). Started by cutting through cover of muck that had been dumped here in working adjoining pits. Bones at 4 ft below surface. Greatest depth 20 ft.
- ✓ Pit 61 On bank and in bed of "pond" at NW extremity. Initial cut five paces west of runway of old Pit 4. Greatest depth 20 ft.
"Cutting into bank on a blind guess that bones may be found below. Sloth bones at 2-3 ft. below surface, which is here artificial and 1-2 ft. below original level. Many pockets
- see 43 62, 63, east of lake outcrop - leave or nothing; 64 nothing
- Pit 65 8 feet west of survey stake C-8+50. On north bank of big ditch draining "lake". This ditch cut through a deposit of bones, as evidenced by great quantities of bone fragments in muck on its banks. Acad. said to have begun work here, but found deposit too deep to be dug with small funds available. Depth 13½ ft. Bones all rotted.
- see 43 66 nothing
- ✓ Pit 67 North edge of "pond", 10 ft. south and slightly east of SE corner of Pit 4. Started to dig parallel to and just inside asphaltic rim. Original surface long ago removed to depth of 8 ft below Pit 4 datum in mining asphaltum, and this depression filled for some distance from bank with muck from pit 4
Greatest depth 20 feet.
- see 43 68, 69, 70, 71; 72 in east of lake outcrop rotted - few; 73, 74, 75, nothing; 76 10 ft. to K-11-50 few phalanges wolf (?) deposit
- ✓ Pit 77 South, and slightly east of south corner of old Pit 60 from which it is separated by a wall less than 4 ft thick and from which it is an entirely different and distinct deposit.
Greatest depth 21 ft.
- 78, 79 - nothing
- over pit 80 ✓ Pit 81 A wall 2 ft thick separates this pit from the "west Univ. pit" on the west. Evidence of an unusually active vent was ample but whole locality blanketed in muck from Univ. pits. First went down to 5 feet and hit clay. Made NS cut, southwest corner of which touches northeast corner of first cut. Found birds of birds and small mammals just under rocky crust (2-3 ft. below surface in oozy earth thru whth the oil vent forces its way. Below appears solid mass of bones. Total deposit measures 4 x 5 ft with depth of 4 ft. Good bones
- 82 nothing
- ✓ Pit 83 A vent or seepage in driveway 60 ft NW of house. As half crust below which calf and colt bones left. depth, at 4 ft. dog, deer and baby's shoe.
- 84, 85, 86, 87, Nothing; 88 old Univ. pit - few broken bones NO 6000; 89, nothing
- also 152 Pit 90 Inner wall of east end large Univ. pit. An overlooked pocket yielding 2 boxes of bones. Meas. 2-4 ft at 5-7½ ft depth.
- 92, 93, 94, 95, 96 Pit 91 10 ft. from southwest wall of large Univ. pit, 8 ft. east 88. Surface muck 2-4 ft. deep, under which 2 ft earth that had been moved before. Below this hard asphalt with few bones. Good bones begin 6 ft. Stopped at 10 ft. to preserve as display.

Pt 80

Northwest end of Pt 60. To 12 ft No real matter. Set
2 or 3 bones - tiger & sloth (10 1/2')

MADE IN U.S.A.

BOND

Dr. Howard

Not published by H

Data for samples from Rancho La Brea shipped parcel post to Scripps Institute of Oceanography on July 25, 1959 to be tested for C₁₄ dating.

Wood samples from tree branches:

Pit no. 16, depth 12 feet, 275 grams, coll. July 13, 1914

Pit no. 4, depth 5 feet, 35 grams, coll. Mar. 1914
G3

Pit no. 9, depth 16 feet, 175 grams, coll. June 22, 1914

7. At least one half of ^{each of} the original samples still remain in the Museum's Rancho La Brea collection.

Led

Los Angeles, California:
Rancho La Brea [^] Longitude 118° 21' 25", latitude 34° 3' 54".
^{U.S.A.Co.Mus. no. 385)}

Artifact: atlatl dart foreshaft [^] bearing data "Pit 67,

Your No. caved wall, SE". Field notes state ~~with~~ that
LJ121

~~at~~ several artifacts were found in ^{an} area embracing
grid sections ~~f~~, G, H and I ~~at~~ from ~~11~~ to 18 feet

~~at~~ in Pit 67 and into Pit 61 which was found to

be actually continuous with Pit 67. See Woodward,

Arthur, "Atlatl dart foreshafts from the La Brea pits,"

Bull So. Calif. Acad. Sci. vol. 36, pp. 41-59, 1936,

for description of this foreshaft and other artifacts

from Pit 61-67.

Wood: ^{Section of 8 feet high, found} ~~from tree~~ still rooted in ground feet below the surface,

Your no. in Pit 3. Bones of typical Pleistocene animals
????

packed solidly around trunk.

^{of root}
~~Step~~ Wood: Section ^{from tree} excavated from Pit 3. ~~Tree was 8 feet~~

Your Tree was rooted in sloping bank of pit (possibly old
no.??? ~~with~~
gully) at 12 feet; tip of broken (or burned?) top-
most branch first encountered at depth of 4 feet. Bones
of typical Pleistocene animals were packed about the
trunk and branch. ~~for gully~~ ^{Final} depth of
~~at~~ ^{3' or so} ~~extended to depth of 27 feet~~ ^{greater}
Pit 27 feet (15 feet below sloping bank in which
tree was rooted).

Sept
Feb 3, 1958

The 96 test excavations made by LACM 1913-1915 revealed fossil bones typical of Rancho La Brea fauna in 18 separate places - including at least 3 areas where other institutions had previously worked. Six excavations uncovered ~~bones~~^{material} bearing bones of Recent forms only.

About a dozen areas were rich in fossils but in two of these preservation was so poor that very little material could be collected.

- 10 Pits with good preservation - typical Pleistocene material
Nos. 3, 4, 13, 16, 40, 61-67, 77, 81, 54 univ. 91
- 4 Pits with typical Pleistocene material poorly preserved
Nos. 9, 17 (med.) east end of lake (several holes including 57), 45 (med?)
- 4 Small pits - preservation good (?)
Nos. 25, 35, 36, 50
- 6 Recent pits of varying sizes
Nos. 10, 28, 37, 51, 59, 88

Pit 3 -- 5 paces south of survey stake J-10+00 (at N.E. corner of Pond)

"Cut trench from bank of pond across a considerable seepage of fresh tar with some of the hardened material. Found a quantity of bones, mostly coyote, but with considerable bird and small rodents, and all probably those of existing species, at a depth of 6" to 1½", in center of area covered by outcrop and seepage.

Around 2' an almost solid mass of bones was uncovered, but so decayed as to be absolutely worthless, so the whole bed was cut through and thrown out.

-----nothing of value -- exposed above 4 ft., at and below which level were numerous wolf and tiger skulls in fair preservation. "

Pit 4 -- northwest bank of artificial pond, west of house

"Began work by driving trench northeast into bank of pond, which bank at this point consists almost entirely of rock-like asphaltum. Presence of bones indicated by fragments in the surface of this rocky formation.

Considerable quantities of bones found just under surface, but so soft that they could not be saved, hence they were cut through and thrown out, and the cut extended into more promising ground farther from the pond. Bone deposit found to extend to the eastward of original cut, and sinking begun on an area presumed to cover that part of deposit.

Great quantities of bones found at and below 4 ft., but preservation so poor that none were saved until a depth of about 8 ft. was reached, where soft-tar-soaked matrix was found, with bones in a fair state of preservation.

The shape of the whole deposit composing pit 4 may be likened to that of a human molar tooth, the crown divided at 16 ft into three roots which extended downward to 19, 24 and 25 ft, respectively."

Pit 9 -- "An interesting feature of this pit was the great mass of hard, yet plastic, asphaltum, that covered with an impervious roof the extreme south end of the bone deposit, and extended on one side into the earth a distance of 7ft. "Began work by cutting 24 ft long and 3 ft wide across outcropping of hardened asphaltum, beside which was an active "vent".

Found left lower jaw of lion at 4 ft, perfectly preserved."

Digging operations which in two places were carried down to 33½ and 34½ ft showed the pit to be a huge fissure, that had filled with tar and sand.

Pit 10 "Began work with dynamite to remove heavy deposit of hardened asphaltum, about 3 ft. above land surface adjoining on the southwest. Made cut $3\frac{1}{2}$ ft wide, northeast and southwest. Found soft material 1 ft. under crest of outcrop. Established datum at 15" under crest. Many bird and small mammal bones just under datum in matrix of tarsoaked sand, but containing much water and the bones mostly too soft to be saved.

(Several days later, on an extension) "Dike or chimney of partly hardened asphaltum, 12" wide, crowding in. Right upper jaw of HOMO at $6\frac{1}{2}$ ft in burned (?) asphaltum of dike -----"

Pit 13 -- Near west fence on the untouched part of a considerable area of hardened asphaltum, through which a small vent was active. Remainder of this surface deposit had been broken up, apparently by the use of powder, into large blocks probably in the search for commercial asphaltum 30 to 50 years ago. About two-thirds of the area had been so torn up, many of the blocks thus exposed showing bones embedded therein. This outcropping was approximately circular, 30 to 35 ft in diameter, at no point rising appreciably above the general level of the surrounding earth.

Traces of bones, rotten and black as the asphaltum itself at 3 ft.

Down to 5 ft ---- in a straight east and west cut. Prospects so far are good and warrant sinking further. Matrix of tarry sand, rather dry and very tough; in places this becomes too hard to work except with powder.

Ten days of work finds us in about same sort of material. Struck clay in two places at 5 ft., suggesting that we have not located on the chimney and that this hardened deposit in which we have been working is merely the filling of a "basin" around 5 ft in depth.

Down to $6\frac{1}{2}$ ft at a point about 4 ft north of original cut and finding material that looks good. Apparently bone deposit lies directly under the series of vents in undisturbed asphaltum near ~~next~~ east edge of basin.

Working at 8 ft and prospects brighter with every inch down. ----- Tapped a considerable pocket of tar about 8 ft (probably main vent), and just under this level, in a clay matrix rich with tar, found hard, well-preserved bones of tiger.

Notable features about pit no. 13 were evidence that the bone deposit had been at some time almost, if not entirely, covered by a domed roof of clay; th----etc.

Pit 16 -- on big outcropping of hardened asphaltum at northwest corner of stable.

"...making trench northeast and southwest nearly across center of outcrop and covering biggest area of fresh asphaltum. Finding bird and small rodent bones in vent in northeast part of cut at and below one foot. Teratornis cranium 6" below surface. Camel anywhere below one foot.

Pit 16 is an almost circular hole, with practically vertical walls down to 20 ft, where they encroach slightly. At 24 ft the deposit contracts much more rapidly and pinches out in a mere crack at 27 ft.

Pit 17 -- On north bank of "Lake", 12 ft northwest of surveyor's stake D-00. Academy of Sciences had dug here some years ago, but had not exhausted the deposit.

Cleaning out tar water and debris of all sorts that had accumulated since Academy did its work. Hole was nearly full of earth, representing caved-in walls and muck from old University pit adjoining on the east.."

Pit 28 -- 15ft. southeast of no. 26 (near northwest corner of concession)

"Cut across surface flow identical in appearance with no. 26. Opened a body of good matrix just under surface, full of bird bones,....etc.

Matrix exhausting at 8 ft. No bones except those of small birds and mammals..... Matrix gone at 8½ ft. (three days digging)

Pit 36 -- 10 ft west and 5 ft south of survey stake P-4+50 (40ft northeast of no. 35)

"Scooped tar from artificial sump, where flow had been active and had filled this sump to a depth of 12 to 15 inches (diam. 4ft). Found many bones of young horse in bottom, evidently of recent origin.

Bed of hard asphaltum underlaid this soft material. Some bones of horse and tiger taken at 3 ft., mostly in this hard material.

Pit 37 -- 10 ft. south, 25 ft. east of stake N-13-00.

"Sank on old vent where was a small patch of hard asphaltum. Bird bones near surface, also coyote badger and some deer, around 3 ft.

Down to full 8 ft where matrix body contracts to a mere chimney....."

Large outcrop east of "Lake"

Pit 43 -- beside survey stake C-4-00 (at north end of outcrop)

Cutting across likely stretch of outcrop, between two vents on bench 3 ft below flat top of outcrop. Surface like rock; it had to be broken with sledge and wedges, assisted by pick.

Some small bones just under surface. Found a saber at 2 ft, etc.
.....bones have a burned appearance.

Cutting at 14 ft still in hard asphaltum which is getting sticky.
At 16 ft matrix good but barren.

Pit 49 -- 30 ft. north and 10 ft east of stake B-4-00.

Cut northwest across bench and into main outcrop. Surface material fairly loose with fair sort of matrix underneath, but asphaltic rock at 3 ft with occasional traces of bone.

At 5 ft no good matrix yet and bones like mush.

At $7\frac{1}{2}$ feet matrix getting sticky

Carried cut to 11 ft under surface of main outcrop. Bones played out. Still plenty of matrix, but barren.

Pit 57 -- 25 feet west and 10 feet south of stake C-3-50 (in swampy hole at east end of outcrop)

Began cutting across seepage at base of wall 5 ft. high, formed by removal of asphaltum for commercial use many years ago. Found matrix 6 inches under surface.

Matrix has run into hard asphaltum around 2 feet.
Matrix looking good at 7 ft and holds some bones good enough to save.

Clay bottom reached at 18 ft. Then tunneled directly under outcrop in its longest diameter. (6 ft. high tunnel). Went in 40 ft finding bones scattered throughout but rotted, mostly from 2 to 3 ft above floor of tunnel down to unexplored depth.

Pit 72 -- cut and tunnel into southwest corner of high part of outcrop.

Extending old cut into wall of outcrop where walls of old work show many bones. Tunnel 6 ft high, roof 5 ft below top of outcrop. Solid mass of rotted bones exposed in lower clay floor, pitching toward center of outcrop at about 25 degrees.

Pushed tunnel in 5 ft where found a considerable reservoir of tar and water, which flooded tunnel floor quickly. No sign of bones near walls of reservoir.

Pit 60 -- midway between survey stakes L-12-00 and M-12-00 (Between old University pits).

"Anderson cutting about 4x6 feet, through a considerable cover of muck that was dumped here in working adjoining pits. Survey marker on northeast back is taken as datum as that represents very nearly the natural level at this point, and is about 2 ft higher than the present artificial level. There is no ~~evidence~~ record as to whether this depression is the result of mining for asphaltum, but all indications favor this theory. The depression, however, caused, contained water and a growth of tules when the University of California began work in 1912, and was filled in the course of digging by their workers.

muck

Finding bones at 8 ft (or about 4 ft below surface). Matrix is of a poor sort, consisting of a mixture of sand, gravel, caly and lumps of both hard and oxidized asphaltum all jumbled together with a scant proportions of heavy oil, which, however, seems sufficient to make the mixture air and water tight.

Pit 61 -- on bank and in bed of "pond", at northwest extremity. Initial cut five paces west of runway of old pit 4.

"Holland cutting into bank on a blind guess that bones may be found below. Finding sloth bones at 2 to 3 ft under surface, which is here artificial and 1 to 2 ft below original level.

Blue clay appearing over whole bottom at about 4 ft. This clay is more or less seamed with oil, which may indicate a body of matrix below..... Stiff yellowish clay covers whole bottom of cut. Below this, around 6 ft good matrix and a fair number of bones in sight.

Indications are that the bone deposit extends to some distance under bed of pond. This will necessitate removal of a great lot of muck that was dumped here in working pit 4.

Removing muck preparatory to enlarging pit. Finding bones almost on the surface of the undisturbed pond bed, where they have been under water for many years, but so protected by the tar-soaked matrix that they are still almost perfectly preserved.

Pit 61 has been a series of connected pockets, and varying in size from a cubic area of perhaps half a yard to ten yards or more, rather than one continuous deposit as in pits 3, 4, 9, 16 etc. all of which went out at a depth of 24 ft or more, while nowhere did this extend below 20 ft and in general it exhausted around 18 ft.

Pit 65 -- 8 feet west of survey stake C-8-50. On north bank of big ditch draining "Lake". This ditch was cut through a deposit of bones as evidenced by great quantities of bone fragments in muck on its banks. Acad. of Scis. said to have begun work here, but found the deposit too deep to be dug with the small funds at its disposal.

"Struck a body of hard asphaltum at 5 ft under original surface. Found same conditions all the way down to 10 ft. Asphaltum in places like so much limestone, except that it picks out in small lumps instead of big ones. Many fragments of sloth Matrix softening at 10 ft., but quality of bones no better. Rotten condition of bones may come as a result of the deposit being cut through many years ago in ditch digging, when the free tar oozed out and was replaced by air and water

Pit 67 -- At north edge of "pond", 10 ft south and slightly east of southeast corner of Pit 4.

"Sinking parallel to and just inside asphaltic rim, on the theory that another deposit of the nature of pit 61 may exist here. Original surface was along ago removed to a depth of nearly 8 ft below pit 4 datum, in mining asphaltum, and this depression filled for some distance from the bank with muck from pit no. 4.

Through muck to old pond bed at 8 ft below pit 4 datum. Struck some bones, mostly rotted, of course, less than 6 inches below pond bottom.....

Matrix resembles that in pit 61 - mostly hard stuff, but with soft streaks and pockets

Pit 77 -- south and slightly east of south corner of pit 60, from which it is separated by a wall less than 4 ft in thickness, and from which it is an entirely different and distinct deposit.

Anderson sinking test pit in ground that bears absolutely no indication of a deposit of bones. Any surface indications that may have existed at one time were long since wiped out in the serach, years ago, for asphalt, and more recently by a heavy blanket of muck dumped here in working University pits close by.

Just under a cover of muck varying from 1 ft to 3 ft in depth, found a crust of rocky asphaltum 3 ft thick at south end, shallower at north end. Fragmentary bones of several different mammals found here.

Pit 80 -- at northwest end of pit no. 60.

cut 3x8ft east and west beginning 4 ft from middle of northwest end of old pit 60. Found mixed earth, largely "fill" to about 8 ft below datum of pit 60 than original ground to 10½ ft where some oil and bone fragments were encountered.

Pit 81 -- a wall 2 ft thick separates this from the west University pit on the west. Evidence of an unusually active vent was ample, but the whole locality so blanketed with muck from the University pits that the source of the oil was not located in work here last fall.

Removed 1 to 2 ft of loose earth at surface, then oxidized asphaltum and clay to 5 ft. where "white clay" (travertine) was struck and work in bottom suspended. East end of this cut just touched a matrix body to open which Anderson picked into the wall and tapped a pocket containing 10 gallonw or more of clear, heavy oil.

deposit a small one 4x5 ft by 4 ft depth.

Pit 91 -- 10 ft from southwest wall of large University pit, 8 ft east from no. 88.

"Surface muck varied from 2 to 4 ft in depth, under which was about 2 ft of earth that had been moved at some time (probably in the search for asphaltum long ago). Below this was hard, impure asphaltum in which bones appear rather sparingly and which now shows skull and etc..... At 6 ft a good deposit was exposed

Extending cut still more on the east. This cut carried to depth of 8 ft . Now extending opposite end of cut. Much asphaltum around and below 4 ft some of it very hard. Soft vegetation that appears like hay shows in spots down to 8 ft, evidently marking the bottom of old asphalt diggings. As traced on the wall of the pit, the floor of these old diggings was extremely irregular. This mixed earth and asphaltum moved so long ago is almost as hard as any original earth.

There were ninety-six so-called "pits", of which sixty-two, however, were purely exploratory, containing no bones whatsoever. Fifteen pits were really productive, but of these, three appeared more recent than the typical Pleistocene.

In addition to the Museum excavations the L.A. High School had 1, Acad. of Scis. 1, Occidental College 1 and University of Calif. 3 (one of which is probably Recent)

Pit 3 -- fine preservative matrix. 6" to 1½' bird, rodent, coyote
2' decayed mass

below 4' preservation fine.

Skulls taken:

Sloth 12, Bison 15, Camel 1, Horse 7, Mastodon 1, Tiger 268, Wolf 185,
Lion 5, Bear 1, Teratornis 1

Pit 4 -- soft bones just under surface. More poor preservation 4' and down
8' first fair state of preservation. High % wolf (compared to high %
tiger in Pit 3). Many bones of birds and small mammals and occasional
baby mastodon. Deposit rich to 25 ft.

Skulls taken:

Tiger 90, wolf 174, sloth 7, Bison 5, Lion 7, Horse 14, Camel 8, Terry 1
Bones of little natelope taken, also snail shells, and seeds.

Number of bird and small mammals large compared to Pit 3 (4 times as many
tho Pit 3 had twice the area.

Pit 9. Mastodon 4 skulls, 10 pairs jaws; Elephant 7 skulls, 14 pair jaws
Other animals found, bear, lion, tiger, wolf, camel, horse, bison, sloth
Bear very large. Poor preservation here. Very little saved.

Pit 16 --- bird and small mammal alternating with layers of large mammals.
Deposit narrow (4' across) appearing to be bottom of a once large deposit.
Skulls taken Bison 4, Bear 1, Camel 1, coyote 5, horse 2, tiger 2, wolf 2

Pit 61 -- skulls taken

Wolf 99, coyote 7, tiger 64, sloth 2, horse 1, deer 1, Lion 1, nothro. 1.

Pit 67 -- skulls taken

Tiger 120, wolf 118, coyote 13, sloth 6, horse 3, bison 3, lion 2

Pit 81. Birds and small mammals under crust at 2-3'. Below this solid
mass of bones of sloth, bison, horse, camel, tiger, wolf down to 5'.
Deposit small in area 4' x 5' x 5 ft. deep. Below 5 feet bones soft
and area 2½-3' in diam. bones mostly bird and small mammal tho including
horse, bison, camel, tiger wolf, coyote. Top part taken in toto for
exhibition. Down to 10' several boxes taken, mostly small.

Pt 3 - trench from bank of pond across seepaged
fresh tar with some of the hardened material
above 4 ft too water soaked & mostly small
stump of tree exposed at $4\frac{1}{2}$ ft in D2
Probed at 12' roots penetrating wall & into boney
mass in clay. Directly under trunk earth loose
& no bones. tree on bank of gully later
submerged by vent breaking thru under it.

Pt 4 N. W. bank of artificial pond west of house
Trench NE into bank of pond - bank of rock-like
asphaltum.
Presence of bones indicated by frags in surface
of this rocky stuff,
no bones savable til 8 ft (began to find at 4')

5:6-7-8 - around pond - exploratory

Pt 9 - trench $24' \times 3'$ of hard asphalt adjacent to active vent;
wood worked in apparently - found at 12' 6 elephant
in situ

~~Probed~~ Eleph 7 skulls 14 jaws

Mastodon 4 skulls 10 "

pit reached depth of 33-34' bones to 28'

a huge fissure that had filled with tar
& sand ~~bone~~ fissure $24 \times 15'$ (?)

Pt. 10 heavy dep. hardened asphaltum, 3' bone
surf.
soft material 1' under crest of outcrop.

Pt 11 out ^{3x6} among numerous vents. Solid clay with
leaves & twigs no asphalt much below 3'

12 Thin crust asphaltum at 18" below then into
ancient vent $2\frac{1}{2}'$ across - full of water wood & fetters
& a shell.

13 Large area of hardened asphaltum then
which was small actual vent, orig. outcrop
30 - 35' in diam - blasted into blocks
by asphalt hunters earlier

bone bearing asphalt very thick, tarry clay,

9 - 11' 13 tiger, 12 wolf skulls

12' - 2080n skulls

14' - " " "

vent still working
had E. spoon out tar.

tiger 39

skull 3

camel rep'd also

wolf 53

horn 1

horn + bone "

int horn 1

few rodents & birds

14 inactive blowhole

15' in artif. depression in which there was some expulsion of tar
no bones.

16 By outcrop of hardened asphaltum at NW corner of stack,
vent in NE part of cut 1' & below
4' across at 6 1/2' depth looks as tho it might be bottom

of a larger deposit, upper part of which eroded away,
birds & rodents numerous much brush.

at 8-10' come many more camel etc in steady find

14' tiger, & bird & small stuff again abundant in chimney

below 22' only bird

were crack at 27'

17 - old acid pit

18 - vent & outcrop to 9' a few bones but wood, poorly preserved

19 bank of lake - within

20 across active vent from which surf. liquid to encrust
ground below & depth of 1-2 inches, no bones

21 pool of liquid & 100 sq. feet encrusted earth no bones

22 tar seep at base of wall of asphalt left after mining
no bones

- 23 ledge of rock - like asphaltum thru which is seepage of fresh material. 4' thru asphalt to clay - no bone.
- 24 SW bank Univ. pit, soft tar on surface rock - like asphalt at 2-3' - lots of liquid asphalt - no bones clay at 3 ft
- 25' asphalt covered area - bone matrix just beneath surface - a few Pleist. bones - tiger - wolf etc. matrix exhausted at 12'.
- 26 across extensive surf. flow.
- 27 - SW bank front - active vents no bones
- 28 surface flow like 26 good body of matrix just under surface bird, coyote, yg horse 8' end - no Pleist. appar.
- 29 small seepage + hard asphalt - no bones
- 30 on vent - no bones
- 31 outcrop small body of matrix with yg. ungulates no more
- 32 surf. outcrop from nearby vent - no bones
- 33 hard surf. to $1\frac{1}{2}$ ' Then barren + very matrix $1\frac{1}{2}$ ' Then dry sand at $4\frac{1}{2}$ ', clay at 5'
- 34 hard asphalt surf - open below - no bones old mining depression
- 35' - small outcrop + little tar - matrix just under surface - a few tiger bird etc. at 2-3', horse 3-5' - matrix exhausted at 8 ft.
- 36 artificial dump where flow was active - tar to 12-15" yg horse present origin. Hard asphalt beneath 4' bones mostly ungulates + birds.

- 37 small patch hard asphalt. Bird near surface
 & coyote, badger & deer at 3'. Fox print at 4'
 birds in vent. 8' a mare drinking only birds
- 38, 39, 42 in vents - no bones
- 40 " " & rocky asphalt
- 41 seepage 3x6' - matrix under soft surface
 birds - small mammals under surf. vent.
- 43 outcrop bet. 2 vents - surf. like rock.
 Pleints small bones under surf. - some elph too
 matrix too hard & dry. After hard matrix,
 too much water & bones not in good cond.
- 44 Pleints - bet 2 vents - bones too soft
- 45 - blowhole of little activity - no bones
- 46 seep & outcrop, hard asphalt just under surf.
 clay 8 ft - no bones!
- 47 outcrop & seepage on bank of "oil lake" no bones
- 48)
- 49 big outcrop east end of "lake" - bone fragment
 but like mush.

32
 29
 22
 20
 15
 13

50 - island (dump of 17) 'in' lake

51 vent & outcrop where earth previously disturbed
for mining asphalt - recent bones ligaments adhering
matrix just under surface beside vent

52, 53, 54 - nothing 2 of them in 'sumps'

55 ^{near} old mining pit nothing

56 rocky asphaltum - into clay no bones

57 Swampy hole - east end big outcrops of 'Lake'

base of 5' wall formed by asphalt mining.

matrix 6 in. below surf. Poorly preserved bones.

58 - 59 - nothing

60 then much dumped from the pit

61 OK

62 - 63 ⁶nd

64, 68, 69, 70, 71, 72, 73, 74, 75, 76

67, ~~77~~ OK

78, 79, no

77 test pit in ground where no indic. of bones,
poorly preserved. No plenty of
~~part of bones~~

80 end of old pit 60 few bones

81 good near mining pit

82 no

83 small seepage - crust of gummy asphalt only - cold at 1'
4' coarse & barriahat

84, 85, 86

87, 88, 89, ~~90~~

- 90 an overboarded pocket of Univ. pit - some bones
91 down to 8' an old asphalt mine digging
10 ft trans - rooped for exhibit,
92 old q - no more bones
93 runway of q - no bones
94, 95, 96 - depressions - no bones.

Pit 17

"Section: on north bank of 'Lake', 12 feet northwest of surveyor's stake D-400. Acad. of Sci. had dug here some years ago, but hadn't exhausted the deposit.
Photo #170 of location

Old Univ. pit opening on east

Pit as originally worked is small - hardly more than 5 x 7 feet at (certain) level, but will be extended in every direction as far as matrix is found. No bones of value recovered for some days, save a bear's caninus (July 30, 1914)

Note that some material goes in pieces - impregnated in the water, (maybe after 1st excavation?)

South corner, lots of bones but all go in pieces.

"Soil is water-soaked as a result of long proximity of water of 'Lake' & that in loose filling of pit.

Worked from July 16 to Aug. 22.

Photos 182 & 152 & 170.

Pit 19

Bank of lake, 30 ft. west Pit 17,

Aug. 13, 1914. "Sinking on a fresh seepage that shows signs of having already been worked; the surface at least is apparently 'filled'.

Barren of bones.

Pt 50

40 ft so. of stake D - 6 + 00 in "Lake".

Before pumping lake, it contained 7 inches of water (by meas.) on top of unknown depth of mud & tar. Sept. 8, 1914. Shaft down to about 8 ft under top casing (2 ft below lake bottom). Material on one side (toward bank), is hard asphaltum, carrying some bones - side toward lake is much softer & lake bottom was struck here & a lower level ($1\frac{1}{2}'$) than on land side.

Frag. elephant & sloth 1 to 2 ft under bottom. perfect ele. tooth 3 ft under bottom just where rock-like asphaltum gives way to a soft sandy matrix. Piece of tree trunk or stump striking up through this soft material. Sept. 28 'Only about 3 ft of water this a. m. sep' in seepage since noon of 26th. Clearness of water & small quantity indicates that it comes from the bottom.

Sept 30 Looking thru black, oil-sealed sand containing a considerable no. of small rounded pebbles, apparently water-worn.

Oct. 7. at depth of 20 ft below "collar" - estimated 25 to 90 muck is gravel & small boulders (2-3th)

Oct. 12 Pumped lake completely so that "a clod the size of a walnut would be visible for several seconds nearly anywhere on the tar of the lake." S.E. part of surface shows clear tar only, with great bubbles down.

Pit 50 contd

Oct. 13, 2 in water on tang lake. "Where did it come from?"

Gravel was reached at 18-19 ft.

at 23 ft less gravel & less oil, sand was like quick sand.

Stopped sinking at $25\frac{3}{4}$ ' under lake level, $27\frac{1}{2}$ ' below platform / windlass, $37\frac{3}{4}$ ' below survey marker E-6+00 (elevation 174.2) which is taken to rep. the orig. level at this point.

"No animal or vegetable remains were found in this digging, except in and immediately below the crust of asphaltic rock encountered at, and forming the bottom of the lake at this point.

"Character of earth thru which shaft was sunk was practically no different at $25\frac{3}{4}$ ' than at 9 feet.

Pit 51

Speaks as to joints, recent. fragments on bird bones.

Sept 9, 1914 6 paces so. & one paces east of survey stake S-3+00. North & east of "oil lake")

Outcrop evidently more or less disturbed by cyp in looking for commercial asphaltum.

birds, small mammals, deer. Not much

V 764

25 feet west of 10 so, of survey stake E 6700
(On pit begun & abandoned by Univ. of Calif. on bank
of lake). No substantial body of matrix &
very few bones (may have been dumped there).

Pt 65' - 8 ft west of survey
stake C-8+50. No. bank by ditch
draining Lake. Bones rotted. Due to early
ditch digging exposing to air & water?

Note: "It is notable that with the
exception, all artifacts recovered have come from
an area embracing Secs. G, H & I in 67 & continued
about 15' into #61. This same area has
yielded a greater variety of shells, many of
them larger than any taken heretofore &
a quantity larger than from all other ex-
cavations. There is in this area, that an
Indian camp was once located very close to
this spot.

Pt 10

Ramp in Sec. F-10.

Photo 36, 46-47-48,
49-50

6 $\frac{1}{2}$ ' 86' 7" 85 ft

This copy
OK

The following pits were purely exploratory and non-productive:

The following pits contained specimens which were typically Pleistocene; those which are starred were fairly productive:

The following pits are not typically Pleistocene, probably geologically Recent: (productive pits starred)

In pits number 59 and 72 the bones were like so much mush -- record does not indicate age of these pits.

In addition to the Museum excavations there were the following:

Los Angeles High School -- one

So. Calif. Acad. Scis. -- one (reworked as L.A.Mus. pit no. 17)

University of California -- three (one of which was not typically Pleistocene) Museum pits 1, 2, 54 and 90 were reworkings of the two Pleistocene University pits.

Occidental College -- one

- ✓ 1 } Pockets in wall of large Univ. Calif. excavation
 ✓ 2 }
 • Begun July 1913
- ✓ 3 Good Pleisto - (~~great no. of Saber Tooth Cat & Bison~~)
 July 1913 - Aug. 1914 NE corner of pond ^{26'} (496 skulls)
- ✓ 4 NW bank of artificial pond west of house
 Aug 26, 1913 - June 15, 1914 - Good Pleisto. ^{(286) skulls}
^{25'}
- ✓ 5 } exploratory - no matrix even
 ✓ 6 }
- ✓ 7 } scratches of surface where there had been an oil overflow.
 ✓ 8 } No good.
- ✓ 9 Pleistocene - elephant pit - ^{rotted bone}
 Nov. 18, 1913 (Other sps. found but no *Acrotherium pachydermis*
 Sept 7, 1914 about all that could be saved)
^{34 1/2'}
- ✓ 10 more recent than others.
 Jan. 1914 - March 1914 ^{13 1/2'}
- ✓ 11-12 cuts among promising acuts - non-productive
- ✓ 13 Apr 1914 - Sept. Pleistocene 99 skulls
^{21'}
- ✓ 14 no matrix (Sank on large blowholes)
- ✓ 15 - exploratory on gray tan-colored clay - non-productive
- ✓ 16 May 29 1914 - Aug 21
^{27'} 27 skulls
- ✓ 17 - north bank of lake - Acad of Sci. excav
^{20 1/2'} water soaked mud July 16 - Aug 10, 1914

✓ 18 - Aug 10 - 18, 1914



Plants evidently, but only a few fragments of bird, invertebrate plant. 6'

✓ 19 - exploratory on fresh seepage - non-productive

✓ 20 - " on actual vent - " "

✓ 21 - " on far incrustated surface " "

✓ 22 - " on far seepage " "

✓ 23 - " " " "

✓ 24 - " " " "

✓ 25 - down to 12' Aug 21 - Sept. 1, 1914

a few Pleist. bones - very scant

✓ 26 - exploratory - non-productive

✓ 27 - " " "

✓ 28 - small mammal & bird to 8' - probably not Pleist.

Aug 26 - 28, 1914.

✓ 29 - exploratory - non-productive seepage

✓ 30 - " " on vent

✓ 31 - " ~~very scant - of 24 invertebrates only in surface~~

✓ 32 - " " surface outcrop

✓ 33 - " " " "

✓ 34 - " " vent

✓ 35 - west bank of "oil lake" Aug 29 - Sept. 2

small outcrops - tiger - hare, bird - 5' very scant. Pleist.?

✓ 36 - Aug 29, 1914 - Sept 10 - 11' few Pleist.

✓ 37 - Aug 31 - Sept. 2, 1914 - bird & small mammal to 8' Recent?

✓ 38-40 - exploratory - non-productive around "oil lake"

✓ 41 - birds & small mammals near surface only, scant

✓ 42 - exploratory - non-productive

✓ 43 - vent, laboratory - Pleist. - scant & fragmentary & poorly preserved

- 48[✓] - Pleisto - postglaciation - no value. Sept 4-10, 1914
- 49[✓] - ⁴⁸ exploration - non-prod.
- 49[✓] - 11' fragments - Pleisto - no value
- 50[✓] on lake bottom - no value - fragments in ^{lake} ~~in~~ ^{about} bottom
- 51[✓] Recent bird & mammal - scant. 5' Sept 9-12, 1914
- 52[✓] 53[✓] swamp & sap pool - non-productive
- 54[✓] SW corner of East Univ. pit - Pleisto. but scant in well-defined deposit.
- 55[✓] 56[✓] - exploration - non-prod.
- 57, 23' Pleisto plenty of bone but badly rotted.
Sept 12 - Oct 13, 1914
- 58 - exploration - non-prod.
- 59 11' bones like mush ~~Pleisto?~~ ~~Prod?~~
- 60[✓] bet. old Univ. pits Sept 16 - Dec. 27, 1914 Pleisto good
15 1/2' 40 skulls. Some for ant. years removed.
- 61[✓] Sept 17, 1914 - June 5, 1915 176 skulls
20' greater - a series of pits usually 18'
- 62[✓] 63[✓] and 64[✓] - explor. - non-prod.
- 64 abandoned U.C. pit - non-prod.
- 65[✓] begun on Acad? Pleisto occasional bones all rotted
- 67 Oct. 28 1914, June 21, 1915, 271 skulls Pleisto
20'
- 68[✓] 69[✓] 70[✓] 71[✓] - explor. non-prod.
- 72[✓] Rotted bones - worst Pleisto age?
- 73[✓] ⁷⁴ ⁷⁵ ⁷⁶ ⁷⁷ ⁷⁸ ⁷⁹ vegetation only
- 74, 75, 76, 78, 79 - explor. non-prod.
- 77[✓] Dec 30 1914 - July 2, 1915 Pleisto 20 1/2' 73 skulls

80 - fragments - no real dep.

81 May 15, 1915, Sept 13, 1915 10'

2-3' birds & small mammals (under cement asphaltum)
below this large bones. 10' Pleints mostly

82, 83, 84, 85, 86, 87, 88, 89 - explor - non prod.

90 inner wall east end large UC pit, an overlooked pocket only.
(2 boxes bones) June 11-15, 1915

91 June 13, 1915 - July 6 Pleints - held for exhibit,
10' not completed.

92 } explor - non prod

93

94

95

96

61

26

6
93

26
62
64
94

17

3

51

///

Pit A

The farthest north of the four pits excavated in 1929 -- at the east end of the park, back of the barn. It is the pit that the "cave-in" occurred in in May 1929.

Pit B

Also at the east end of the park and north of the barn, but not as far north as Pit A. This pit had the "tunnel" in it; and also is the one that had the 16 foot marker, and where Ridgeway made a diagram drawing of stratification.

Sloth here; milvulus here (late 1929)

Pit C

At the west end of the park back of Bryan's house.

No sloth

Smilodon

Small pocket of bones on north edge down at bottom (24'?)

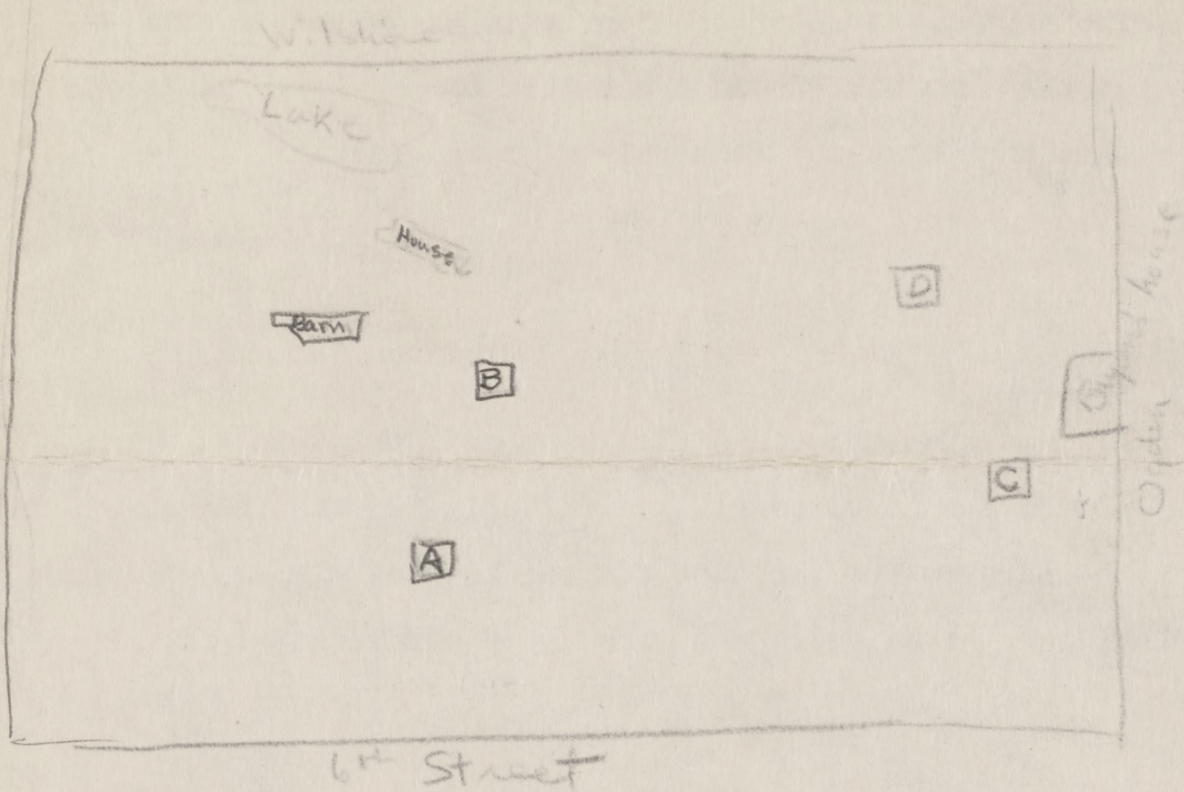
This pocket removed by Bliss after Conkling Cavern trip (late 1929)

Pit D

At the west end of the park, also, but south of Pit C. It was barren, I believe.

QUESTIONS *To* Was Bliss

1. Which of these pits did you work in after you got back from Conkling Cavern? *B & C (mostly B)*
2. If in more than one, which one was referred to as "Bliss '29". or is it possible you just wrote that on all the boxes even though more than one pit was represented? *yes*
3. Can you remember anything about Pit C -- what was in it, when was it filled in, how deep was it? *(see above)*
4. Which pits had many bird bones? *?*



Los Angeles Museum Excavations at Rancho La Brea
July 1913 to June 25, 1915

There were ninety-six so-called "pits", of which sixty-two, however, were purely exploratory, containing no bones whatsoever. Fifteen pits were really productive, but of these, three appeared more recent than the typical Pleistocene.

Exploratory pits, which were non-productive: total sixty-two pits nos. 5, 6, 7, 8, 11, 12, 14, 15, 19, 20, 21, 22, 23, 24, 26, 27, 29, 30, 31, 32, 33, 34, 38, 39, 40, 42, 45, 46, 47, 48, 52, 53, 55, 56, 58, 62, 63, 64, 66, 68, 69, 70, 71, 73, 74, 75, 76, 78, 79, 82, 83, 84, 85, 86, 87, 88, 89, 92, 93, 94, 95, 96

Pleistocene pits: twenty-six, of which twelve were really productive
#1 and 2 pockets in wall of large University of California excavation

- Pit No. *3 good -- depth of 26 feet
*4 " " " " 25 " depth 34½ feet
*9 bones plentiful but badly rotted. Mainly elephants and mastodons preserved
*13 good -- depth 21 feet
*16 " " " 27 "
#17 reworking of old Academy of Sciences excavation which was originally very productive. This later excavation found material water-soaked depth 20 feet.
18 only a few fragments of bird, ungulate and plant -- depth 6 feet
25 very scant material -- depth 12 feet
35 " " " " 5 "
36 fair -- depth 11 feet
43 bones scant and fragmentary and poorly preserved ---a
44 poor preservation, no value
49 a few fragments, no value -- depth 11 feet
50 " " " " "
54 bank of old east University pit, no well-defined deposit, scant material
57 many bones but all too badly rotted to keep -- depth 23 feet
*60 good -- depth 15½ feet
*61 good -- a series of pockets, the deepest reaching 20 feet
65 occasional bones, all rotted
*67 a good pit, connected with pit 61 -- depth 20 feet
*77 good -- depth 20½ feet
*81 rather good -- depth 10 feet
90 an overlooked pocket in old University pit
*91 good, excavation incomplete to preserve pit for exhibition.

* -- ~~productive~~ productive pits

-- though the museum excavation at this site was of little value the original excavation by the Southern California Academy of Sciences proved very good

Pits which are doubtfully Pleistocene, exhibiting much more recent characters than the typical Pleistocene pits: Eight in number

- Pit No. 10 very productive and including the only human remains found at La Brea
28 small mammals and birds only, presumably Recent (geologically)
37 " " " " " , age questionable
41 " " " " " " -- material scant
51 scant material, presumably Recent
72 worthless rotted bones, age questionable
59 " " " " "
80 no definite deposit, fragmentary bones, age?

In addition to the Museum excavations the L.A. High School had 1, Acad. of Scis. 1, Occidental College 1 and University of Calif. 3 (one of which is probably Recent)

apparently first recorded by Gaspar de Portola in his diary of the Portola California Expedition of 1769-1770. Approximately seventy years later a second early report of the occurrence of bituminous springs near Los Angeles was made by the French explorer Dufлот De Mofras. In his account appears the following statement:

"Two leagues to the southeast of Los Angeles there are four great sources of asphaltum, situated on a level with the earth in a vast prairie. These springs open in the middle of little pools of cold water, while the bitumen possesses a higher temperature. This water has a mineral taste, which, however, does not prevent animals from drinking it. At sunrise the orifices of these springs are covered by enormous bubbles of asphaltum, often being more than a yard high, and looking like soap bubbles."¹

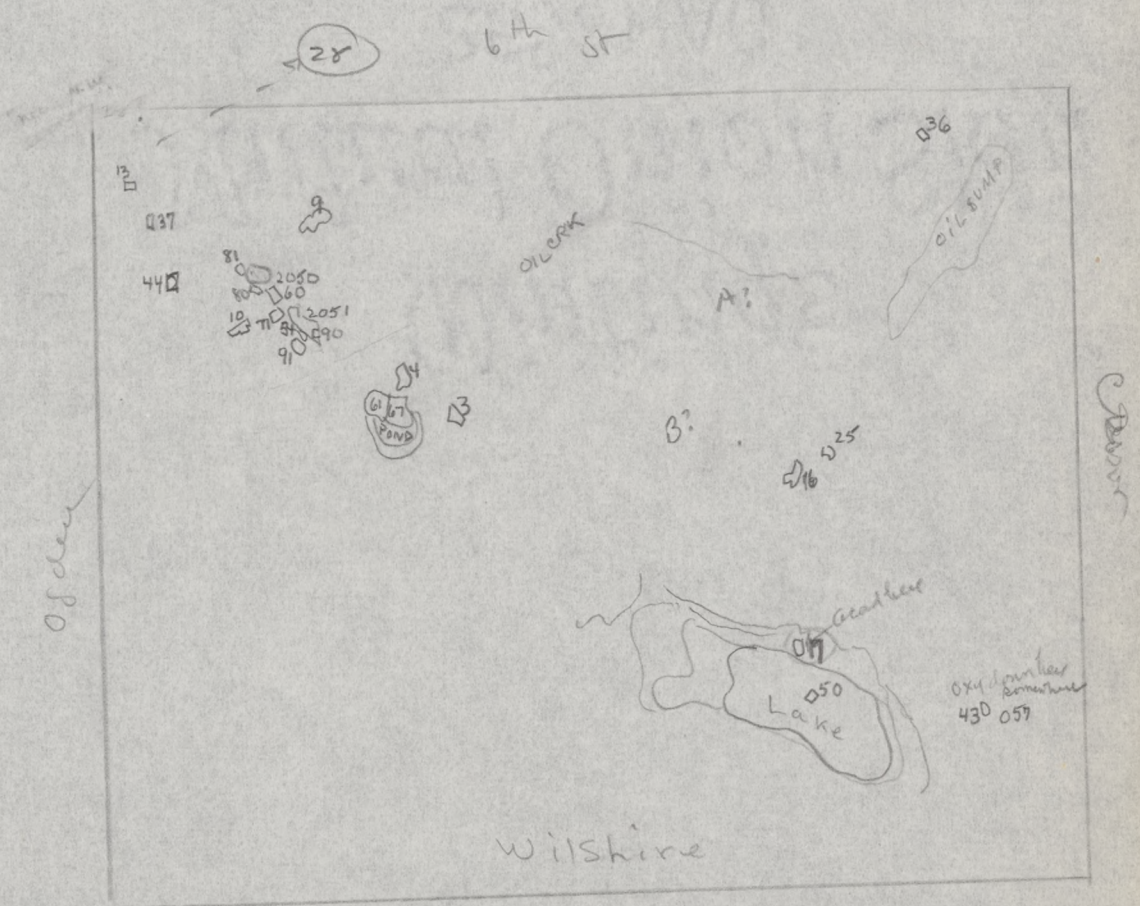
On the map accompanying this report De Mofras indicates the source of the bitumen in the plains west of Los Angeles. Apparently the first cartographic record of the position of bituminous springs, which may be identified with those of Rancho La Brea,² is that made by E. O. C. Ord³ in 1849. On a topographical sketch map of the Los Angeles plains and vicinity, issued with Lieutenant Ord's report, the location of pitch springs is shown at a point several miles west of Los Angeles and south of the gap in the mountains now known as Cahuenga Pass.

In 1853 the region was again examined as part of the program of exploration for the Pacific Railroad survey. In the report of this

1. Mofras, Dufлот De., *Exploration du Territoire de l'Oregon, des Californies et de la Mer Vermeille*, executee pendant les annees 1840, 1841 et 1842. 2 vols. with atlas in folio, pp. 357-358, Paris, 1844. Translation quoted from A. W. Vogdes, Calif. State Min. Bur. Bull. No. 10, p. 98, 1896.

2. The name Rancho La Brea refers to an old Mexican land grant in the vicinity of Los Angeles. As now generally understood the name applies more specifically to the plot of ground on which the fossil-bearing asphalt beds are located.

3. Report of the Secretary of War, communicating information in relation to the geology and topography of California. Report of Lieutenant Ord to General Riley, dated October 31, 1849. Senate Ex. Doc. 47, 31st Congress, 1st sess., pp. 119-127, 1 map, 1850.



Please hold WLB

Pit A

The farthest north of the four pits excavated in 1929 -- at the east end of the park, back of the barn. It is the pit that the "cave-in" occurred in in May 1929.

Pit B

Also at the east end of the park and north of the barn, but not as far north as Pit A. This pit had the "tunnel" in it, and also is the one that had the 16 foot marker, and where Ridgeway made a diagram drawing of stratification.

(Sloth here; mil. feds here (late 1929))

Pit C

At the west end of the park back of Bryan's house.

No sloth

Smilodon

Small pocket of bones on north edge down at bottom (2x'?)

This pocket removed by Bliss after Conkling Cavern trip (late 1929)

Pit D

At the west end of the park, also, but south of Pit C. It was barren, I believe.

QUESTIONS Directed to Wesley Bliss

1. Which of these pits did you work in after you got back from Conkling Cavern? B & C (mainly B)
2. If in more than one, which one was referred to as "Bliss '29". or is it possible you just wrote that on all the boxes even though more than one pit was represented? *yes*
3. Can you remember anything about Pit C -- what was in it, when was it filled in, how deep was it? *See above*
4. Which pits had many bird bones? ?

So

